The Builder.

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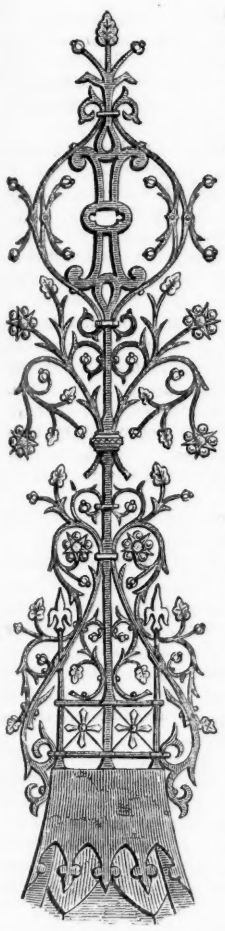
The Story of Monuments in Rome.



T is about five years since attention was drawn to the interesting results of excavations in the gardens of S. Sabina, the Dominican Convent, on the Aventine; undertaken by the prior of that community, Père Besson, of French birth, and distinguished by talents as an artist; who had engaged an efficient person of his own nationality to superintend the works here. That convent, attached to one of Rome's finest churches in the Early Basilica style, was originally a castellated palace, of the potent Savelli family; till conceded, in 1216, by Honorius III., a pope belonging to that same house, for a cloistral residence to St. Dominic and his first followers under the rule he instituted. Portions of this Savelli palace, reduced to subterranean state, were identified; together with other remains of far higher antiquity; and fortifications, among the most ancient yet preserved in Rome, in these discoveries of buried ruin, reached, at more or less depth, below the garden grounds, on the Aventine's western declivity. We first entered a small vaulted chamber; quadrilateral, in good preservation, of antique Roman, mixed with Mediæval brick masonry; remains of white and black mosaic pavement on its floor; and at one side a construction in enormous blocks of volcanic peperino, pronounced by archæologists to be undoubtedly a part of the fortification commenced by Tarquinius Priscus, and completed by Servius Tullius; probably the very walls thrown up along this ridge by the former king, who did not live to finish his projected defences of the enlarged city. This fragment had evidently been absorbed within the structures of a palace, supposed of the imperial epoch, over which had again risen some advancing wing of the Savelli castle. Several other chambers, of various dimension, were thence entered; their masonry in parts of *opus reticulatum;* for the rest of compact lateritial brickwork; and one of these terminated in a spacious archway opening on the hill-side. Another, the loftiest and least ruined of these halls, still retained its stucco coating, with remains of painting, figures, and arabesque ornaments, most gracefully designed; one little group representing a sacrifice before the statue of a god, in an ædicula. Rudely scratched Latin lines on this stucco surface led to the inference that this chamber, after becoming subterranean and otherwise uninhabitable, had served for a prison; one unfortunate inmate having inscribed curses against those who caused his loss of liberty; and another, more devout, left record of his vows to sacrifice to Bacchus in case of recovering that blessing. Again was seen a portion of the Servian walls; its huge quadrate stones here still better preserved, and more fully exposed by the falling away of the brickwork that had encased it on both sides; here serving the purpose of a partition between two series of chambers. From the slopes of the hill we looked down into other larger rooms, deprived of roofs, but exhibiting many fragments of mosaic, either simply in black and white cubes, or more elaborately ornamented with designs. Skulls and bones lay strewn in different spots within the limits of these now subterranean buildings; and an entire skeleton, found in the painted chamber, seemed to prove the fate of one among its imprisoned inmates, never emancipated. A multitude of objects, found in the course of the excavating labours, were long visible in a room of the convent; some few of artistic and superior character; cornices and friezes, with beautiful chisellings in differently coloured marbles; a torso of Jupiter, and fragment of a draped female statue, both in good style; terra-cotta signets, with the professional works of masons or architects, as found in almost all ancient Roman edifices; numerous small lamps of the same material; ivory *styli*, and fragments of glass phials, remarkable for the attainment evinced in the manufacture of that material. Most curious, among several epigraphs, was one supplying the correspondent half to a mutilated tablet, at Naples, with record of a consulate hitherto wanting to fill the series of Roman annals. Of those walls begun by Tarquinius Priscus, we read in Livy (l. i. c. 36), that he began "muro lapidis circumdare urbem," when the Sabine war occurred to prevent their completion; that afterwards the works resumed were interrupted by the king's death; and, in Nibby's map of the several Roman fortifications, from Romulus to Urban VIII., we see the Servian lines carried along this Aventine height, precisely where uncovered; and visible to the extent described, when we visited the spot some years ago.

Such were the conditions in which we saw these unburied ruins when first brought to light. But what a change in their aspect when we visited them a few weeks since! Those subterraneans at the higher level of the hill were still indeed accessible; but their interiors were half filled up by the soil that had fallen from above; nor had it ever been cleared away; so that much was withdrawn from inspection; and of much more but an imperfect glimpse could be, with some inconvenience, obtained: as to those of the Servian walls, so interesting to the antiquary, nothing could be now reached or inspected; and one of the monuments of Rome's primitive history thus remains carelessly sacrificed! Lower down, indeed, on the declivity, we were indemnified by another curious series of antiquities, more completely accessible than at the earlier stage of their excavation. First, about midway, a long corridor, entered by a vaulted way, regularly hollowed, without any masonry, in the solid rock; narrowing in some places, but for the most part giving ample space to persons advancing in file; serpentine in its windings, but of what extent we could not ascertain; the friar who was our guide (and who indeed showed an adventurous spirit) never having reached its term, nor learnt more than enough for vague report on the mysterious subject. Lower down, near the level where these gardens are bounded by the wall that skirts the high road dividing the Aventine from the Tiber, we entered; descending, near the *puteal* of a deep well, another labyrinthine series of narrow corridors and chambers; one of the latter expanding to considerable width, and displaying remains of architecture ornate in character,—pilasters, pediments, cornices, and the traceable though impaired decoration of arched niches, at intervals round the walls; suggesting the idea of a Nymphæum,—some aristocratic or perhaps imperial retreat from the publicity and noontide fervour of summer days, amid these pleasant bowers on the fortified hill. The well, in a deep funnel, or shaft, of compact brickwork, had no doubt sent a supply of its waters to this Nymphæum; which we enter by descending the cork-screw stairs outside the walls of that building; like a sunken tower, inclosing the spring from the depth where it gushes forth. Years have passed since the discontinuance of all researches in these gardens; nor is there any present prospect of their being resumed, for the enterprising Prior Besson is no more: the Dominicans want means to carry on excavations further, and the Government does nothing to assist them.

On the southern slopes of the same hill is another extensive garden of the Jesuits, whence we enjoy a wide prospect, both within and beyond the Roman walls,—one of those scenes intensely characteristic; and so impressive in mournful solemnity, so fraught with memory and association, that, however familiar with such Roman landscapes, we ever gaze on them with renewed interest; in which a certain awe is blended with delight. Solitary old churches and convents; the distant fronts of stately basilicas; here and there a dilapidated farm or humble cottage amidst vineyards and orchards; a tower of Aurelian or Honorius rising from the dark line of turretted walls,—such are the salient features of this scene within the nearer region; whilst noble backgrounds of mountains close the distance by their majestic barriers. It is not many years since were discovered, on a ridge near the southern limit of the Jesuits' estate here, where the Aventine faces the height crowned by the antique church and monastery of St. Sabba (most picturesquely conspicuous), two considerable portions of the Servian walls, the most perfect indeed now visible on any site; the larger extending about 200 feet; the construction, in immense quadrilateral unequally sized blocks of peperino, laid in regular courses; and at about the centre, in the upper parts, a broad, very regular archway, of similar stone, quite uninjured by time, like the head of a portal; in *front* of which advances the curtain of wall, in this antique masonry, that seems to have screened altogether, if not the arch itself, the gateway probably surmounted by it. At both sides, on one hand, at a right angle with this fortifying wall, advance the ruins of structures in *opus reticulatum* (telling of the earlier imperial epoch), and so as to look upon that of Servius across a shallow moat, hollowed down to its base below the level of the cultivated grounds. Higher up on the declivity is seen the other fragment, much less considerable; exactly similar in style; being here almost entirely below the surfaces, and rising against one side of a deep pit, where the soil has been removed expressly to display this structure. At some distance, before a garden-house, lie heaps of marble fragments; one, a mutilated head, with scarce a feature traceable, found in clearing away the soil around these venerable remnants. The Jesuits, here as elsewhere, have shown an enterprising spirit; and have lately ordered, within the same territory, new researches, that may be supposed promising, though not yet proved productive.

The only other conspicuous portion of the Servian walls besides what we owe to these fathers researches, since these remains in the Dominican garden have been again interred, stands in sight from this spot on the declivity below St. Sabba, where its massive peperino courses form a buttress to the hill side, picturesquely shaded by creepers, and here more mellowed in hue by the action of time or climate. Nibby refers to the same fortifications, an inconsiderable ruin, but a few lines of stonework on the verge of the Tarpeian precipice below the Palazzo Caffarelli; but more recent writers consider these fragments to belong to the Temple of Juno Moneta, where the public money was deposited, on the site of Manlius's house. Of the *agger* of Servius much is indeed preserved, extending its prominent and now cultivated ridges through the Villa Negroni, on the Viminal, through the Barberini and Massino gardens on the Quirinal.

A retrospect of the story of vicissitudes affecting monumental antiques in Rome may be not uninstructive, and may elicit many curious facts

to illustrate the spirit of the past; whilst too often exciting regrets, and compromising the credit of ecclesiastical power in its action; unchecked by any interference of civil authority, or any influences beyond its proper sphere. Not, indeed, that severe blame, or great surprise, should be roused by the shortcomings or positive wrongs attributable to ecclesiastic agency in this respect; since we have but to consider the natural perpetuation of that reaction and temper against Paganism, which impelled the early church to regard all its deities as so many infernal demons; to shiver its idols and devastate its fanes; whenever a juster principle failed to interpose for the object of dedicating them to a purer worship. The government of the present Pope, it must be owned, has done much for the furtherance of archæologic interests, and spent sums towards these objects, considerable in their proportion to its embarrassed finances, though far below what it has appropriated to Christian monuments or restorations. One of the greatest discoveries, for the light thrown on disputed topographic questions in the sphere of Roman antiquity, was that of the Julian Basilica, on the Forum; brought to view, after ages of interment, by excavations under Canina's superintendence, in the earlier period of this pontificate; though, indeed, no remains of beauty, or any architectonic elevation, but merely a stylobate heaped with fragmentary ruins, is left, —the visible result of those well-directed labours. And the excavations on the Appian Way, commenced in October, 1850, also directed by Canina, have laid open a street of tombs for an extent of several miles, from the mausoleum of Cecilia Metella to the base of the Alban hills, with advantages to the study of antiquity, claiming gratitude from all Europe. The Architectural Museum, in the Capitoline Tabularium; the repairs of the Colosseum; the disencumbering of the Pantheon, by removal of mean, unsightly houses around; and, above all, the excavations long since commenced, for some time suspended, but now again in progress at Ostia, under direction of Visconti, form other titles to respect on behalf of this government.

Very different is the evidence supplied by annalists respecting the procedure of the papacy in past ages towards those unique monuments, amid which its throne is placed; though, indeed, certain brighter pages shine out from the gloomy record; showing how its capital was benefited by the merits and intelligence of popes, such as Martin V., Nicholas V., the worldly but munificent Medici, the energetic Sixtus V., and Benedict XIV. For a picture of Rome in the first half of the fifteenth century, and for indirect proof of demolition's dire achievement subsequently, we may turn to the writings of Flavius Blondus (as he is known in his Latin authorship, otherwise as Biondo da Forli), giving a description of the desolate city under Eugenius IV. (1431-46), to whom he addresses his "Rome Restored and Italy Illustrated." Drawn up with careful minuteness, not much apparent knowledge of classic literature, but a *naïve* truthfulness that gives the sense of reality to the reader, his pages please, while his narrative often surprises. Referring to the Palatine, he becomes pensively facetious, and observes that the imperial mount being entirely abandoned to the pasturage of sheep, horses, buffaloes, and goats, the voices of those quadrupedal tenants might suggest the name *Balatinum*, rather than the classic one for that height! Yet still he tells us were erect among its ruins two portals of marble, the most splendid of their description in Rome. At the foot of the Aventine, between S. Maria in Cosmedin and the Tiber, he tells of having seen thrown down, to be converted into lime, some beautiful marble arches, popularly supposed to be in honour of Horatius Cocles, but probably a part of that splendid temple over whose ruins Adrian I., about 772, raised the basilica still standing, and containing several marble columns of the Pagan fane, dedicated (as some assume) to Fortune. The cave of Cacus, says Biondo, was still visible on the Aventine slope, near the back of that fine old church. At the foot of the Quirinal (here strangely mistaken for the Esquiline) he points out, above the piazza of Trajan's Forum, the ample and stately ruins called the Palace (or Thermæ) of Emilius, of which now remain but a few vaulted recesses, concealed by a few paltry houses, except where a glimpse may be obtained through a narrow obscure court, not always accessible, and still known popularly as the "Baths of Emilius," though shown by Canina to pertain to the vast system of outbuildings with arcades by which Trajan had his Forum bounded on this eastern side, under the Quirinal acclivity. On the heights above this Biondo indicates the conspicuous remains of Mæcenas's villa and gardens; then among the stateliest of Rome's ruins; together with the tower whence Nero looked down on the conflagration; of all which edifices nothing now stands save that tower, well known to be a Mediæval fortress, included, at present, within the premises of a female convent.* In an apostrophe to Pope Eugenius, this writer highly compliments his holiness for his restorations of the much-injured Lateran Palace; residence of the pontiffs during 1,000 years; in laying foundations for additions to which he describes how had been discovered, at a depth of 18 feet below the surface, many spacious chambers and arcades, columns and incrustations of variously-hued marbles, and some "most beautiful statues;" relics, no doubt, of that imperial palace confiscated by Nero from Plautius Lateranus, and inhabited by Constantine till he bestowed it on Pope Sylvester; but how disappeared, or whither were transferred these precious materials and art-treasures, Biondo fails to inform us. We shall resume our stroll.

PROFESSOR SMIRKE'S LECTURES ON ARCHITECTURE, AT THE ROYAL ACADEMY.

LECTURE V.†

IN my last I addressed to you some remarks on the subject of form as it affects design in exterior architecture. I propose now to submit to you the result of my experience and reflections on design in inferior architecture. These two subjects, as I then stated, readily admit of separate consideration, and, indeed, almost demand it; for the aims, as well as the means, of the designer in each case are widely different.

In determining the external features of a building we have to consider, besides the character of the building itself, various collateral circumstances—such as the nature of the site, the character of the surrounding scenery, or of the adjacent architecture. It is far otherwise with internal architecture; there we may disregard all these collateral circumstances, and limit our attention to the individual character of our subject.

In designing the interior of a building, however, there arises a new and peculiar source of difficulty. Considerations of convenience come in to embarrass our pencil and to complicate our task; architectural effect and fitness of arrangement will often militate most inopportunely against each other. We must needs have a door, perhaps, where we would fain have had solid masonry; and light, perhaps, can only be obtained from the east, whilst æsthetic considerations may point to the west as preferable. In fact, to reconcile these two important, yet often incongruous objects, forms one of the severest trials of an architect's skill and patience. The art of conveniently arranging the various parts of a plan, so as to fully adapt them to their special purpose, is truly one of primary importance. It is, indeed, obvious that all our labour and art may be wastefully expended if our plan be not such as to afford a convenient collocation of its several parts. To lay down a good plan, therefore, becomes the first duty of an architect, and demands his first and most earnest attention. The subject of a convenient arrangement of a plan cannot be entered upon with propriety here. I will, therefore, on this point confine myself to the general observation that simplicity and directness are cardinal virtues in all architectural arrangements. Avenues should be as straight, as short, and as obvious in their course as possible. The rules for the moral conduct of a man seem very applicable to this branch of our art; his ways should be clear and obvious, they should be free from ambiguity and uncertainty, without tortuous or dark places. The right way is always the straightforward way; but, when a turn is necessary, let it be one that cannot be mistaken.

The first impression on entering a building should be such as is becoming its special purpose, and, if possible, suggestive of it. The temenos of a Greek temple was well calculated to give an impressive air of sanctity to the temple itself, by excluding from view all incongruous objects. A similar feeling, perhaps, led the architects of early Christendom to form that peculiar forecourt or atrium in front of the naos, of which a few examples still remain. The basilicas of San Ambrogio at Milan, and of S. Clemente at Rome, are interesting examples. There can be little doubt that the builders of that devout age were influenced by subjective considerations of this kind, although the ritual appropriation of this portion of the building was to receive the catechumens of the church, and to afford a suitable place where the candidates for baptism might present themselves. At all events, a very powerful effect must have been produced upon the eye and mind by thus shutting off from view the outer world, and concentrating attention on the sacred structure about to be entered.

It was, perhaps, a similar motive, a legitimate artifice for the purpose of strongly impressing the mind of the worshipper, that led our old church builders usually to form their doorways of very moderate dimensions. Great emphasis was ordinarily given to the western, and often to the lateral doorways, by exterior decoration, but the actual opening of the doorway is usually comparatively somewhat low. The natural effect of this is to produce a surprise at entering, and so affecting the mind with awe.

Turning now to domestic architecture, we shall not fail to recognize the efforts made by the early Italian artists in designing the entrance halls of their noble palazzi, to secure a favourable first impression. Their halls are of large dimensions, treated in a broad and grandiose manner, without much ornament, but usually embellished with ancestral statues and warlike trophies.

This first entrance-hall is, however, sometimes made subordinate to a capacious inner central hall, giving means of communication with all the principal apartments; a happy idea, alike productive of social convenience and architectural effect. Palladio's celebrated Villa Capri is a specimen of eminent skill that has been productive of a host of similar examples, not only in the land of its birth, but even in our country, as at Cobham Hall, and other of our princely country mansions.

These inner central halls may, perhaps, be regarded as lineally descended from the interior peristyle of the Romans, which, as we see at Pompeii, formed the ordinary place of family resort, giving access to all the adjacent apartments.

The cloisters of conventual buildings were, apparently, an amplification of the same idea, and derived from the same source. Whatever the phase of art, whatever the mode of treatment, whether arcaded or columnar, or both, these columns afforded occasions for most picturesque and pleasing designs. At those interesting remains of Roman magnificence called the Villa Mecœnas, at Tivoli, we have a remarkable instance of the union of the arcade and colonnade, forming a cloistered ambulatory, an arrangement by which we have the greatest possible variety of outline and *chiaroscuro*.

I proceed now to an important feature of almost every structure destined for man's habitation—I mean the staircase. In designing this often very picturesque feature, it must be admitted that we owe little to ancient examples. I am unable to cite any instance of an internal staircase of very striking effect in any classical remains. Magnificent exterior flights no doubt occur, and in Belli's description of the Greek theatres of Crete we see evidences of the existence of double returning flights, similar to those so common in modern architecture, having each flight inclosed within solid walls. The newel stair was certainly of purely Greek origin. A perfect example exists in good preservation among the ruined temples at Selinuntum; its dimensions, however, are extremely small, the diameter being only 6 feet 4 inches. The domestic architecture of Rome

* It was built in the time of Innocent III., by the family of one Peter Alexius, and now called Torre delle Milizie; and rises among the most conspicuous objects in its quarter of this city; still gravely pointed out by *ciceroni* as the elevation where Nero played the lyre whilst Rome was burning!

† See p. 143, *ante*.

seems to have required little aid from interior stairs; and even in so sumptuous a building as the Coliseum, where 40,000 persons had to be provided with ready access to very high levels—built, too, when Roman power and art were in their zenith, expressly to gratify the extravagant love of display of the Roman people—we still find no very pompous staircase, although, it is true, the stairs are numerous, and, as I mentioned to you two weeks ago, executed with great masonic skill.

Among the buildings that remain of earlier Mediæval art, it is still difficult to point to any very fine staircase.

Highly effective flights of stairs no doubt occur. There are notable examples at Assissi and at Lucca, where there is a flight, 7 or 8 feet wide, with a marble arcaded balustrade, sufficient to show that the builders were to some extent aware of the fine effects attainable by the artistic treatment of this portion of their plan. Still, the examples are rare. I know of none in this country of greater importance than in the cathedral-close at Canterbury.

The newel-stair was certainly the most usual form of stairs in buildings, even of most important character, during the Middle Ages. The example at Dover Castle, known to most of us, is of large dimensions; that at Tamworth Church is, perhaps, unique in this country, as presenting a double spiral stair round one newel. So characteristic is the newel stair of Mediæval architecture, that the partially-detached turrets which usually contain them are among the most marked features of the style throughout Europe. Perhaps no city contains more remarkable examples than Nuremberg. Wherever this turreted staircase occurs, it always constitutes a pleasing object, imparting an agreeable variety of outline to the composition.

As peaceful arts advanced, and men ceased to look for security in embattled buildings, the artistic builder soon perceived the opportunities afforded by flights of stairs for pleasing and pictorial effects. Nor could he be insensible to the extreme inconvenience of the Gothic spiral form of staircase, where, whatever the length of the steps, there necessarily can be but one place offering a convenient proportion of the tread to the riser.

In the quiet times of the later Tudors, staircases in this country began to assume their proper character; and there is no part of our old Elizabethan mansions on which builders seem to have dwelt with more pleasure, or on which they were more wont to exercise their playful fancy, than the staircase.

But while those fantastic works were in course of erection which we see at Crewe Hall, Hatfield, and elsewhere, especially in Germany, the more polished artists of Italy were erecting staircases of magnificent proportions and bold character, yet of a totally different character, and this is a phenomenon well worthy of observation. At the very time when those rude and rather grotesque works were being executed here, there existed in that land of art, Italy, staircases designed by the great masters, which were consummate models of grace and refinement, like that at St. Giorgio, at Venice, by Palladio.

The genius of each people is well typified in this diversity. Bold, irregular, and unrefined, such were the Elizabethan and Jacobian schools; whilst the works contemporaneously executed by the Italian school were grave, symmetrical, and simple.

I am well aware that the study of this contrast may lead different minds to very different conclusions. The picturesque and quaint exuberance of our own old manner of designing the balustrading, for example, seems calculated to win the admiration of the painter, while a different feeling may prevail in the colder temperament, which is forced, as it were, on the architect by the very nature of his profession, working, as he does, not on canvas, but in solid masonry. As time advanced, the sobriety of manner which distinguished Italian staircases (and, indeed, architecture generally) in the fifteenth and early part of the sixteenth century, gave way, and staircases began to be designed in a capricious, fantastic manner. Excess of freedom, and a wonderful power of construction, led ultimately to the erection of staircases fit rather for the scene-painter than the architect.

Greatness of dimensions, however, was a merit to which all were alive, and we, therefore, find in Italy staircases of a size almost extravagant. The staircase in the Albergo dei Poveri, at Genoa, is 115 feet long by 63 feet wide, and that in the Royal Palace at Naples measures no less than 163 feet by 85 feet. The Renaissance school, to which I am more particularly referring, employed two very different types of staircases, each, perhaps, equally susceptible of beauty—one wherein both ends of the steps are supported by solid walls, the other where one end only was let into a wall. As notable and familiar examples of the first, I might refer to the palaces at Versailles, Fontainebleau, and the Louvre, and our own Reform Club. Their form of stairs is capable of great dignity as well as beauty; but it has some inherent inconveniences. The raking soffite of each flight is a source of difficulty in design, and gives rise to some unpleasing effects. They are wanting, too, in lightness and freedom, whilst persons ascending and descending do not see each other until they abruptly meet. The staircases of the second type are, on the other hand, far more free and open, and the eye expatiates over the whole area at once. It is almost needless to give examples of this latter familiar form. The elegant work of Palladio, to which I have already adverted, at Venice, and the stupendous example at Naples, will illustrate the type. I might add a third variety, viz., where there is no turn, and the stairs extend in a continuous straight line. The Royal Library at Munich has a staircase on this plan. The Scala Regia, in the Papal Palace at Rome, is another example, presenting an extremely striking architectural scene. The proportions are colossal, and the flight is flanked by a stately colonnade.

The effect of this staircase is artfully heightened by a peculiar expedient. The flanking walls are not parallel, but gradually approach each other, the width at the bottom being 10 feet wider than at top. The object no doubt was, by an optical illusion, to increase the apparent length of this avenue of columns—an architectural fraud, in fact, ingenious, but hardly to be recommended for imitation.

It is, I think, to the second type that I would point as most deserving approval. Schinkel's great work, the Museum of Berlin, is a favourable instance of it; and a still more colossal staircase at the same building has recently been erected by Stüler. Its dimensions are about 140 feet by 70 feet, the walls affording a magnificent field for the frescoes of Kaulbach.

The principal error to avoid in these great open staircases is an appearance of tediousness in mounting. It should never be overlooked that the great—indeed, the only legitimate object of a staircase—is to facilitate our way up or down; and no display of architecture will reconcile us to any unreasonable amount of indirectness in our course. Those large, straggling, tedious stairs up which we are occasionally compelled to work our way, and which, by following, in their turnings, along all the four sides of the staircase, seem to lead us in any direction rather than that which we desire to take, are at once unsightly and incommodious. Before I finally quit this subject, I desire to commend to your observation that a simple flight of even a few steps will be found, in the hands of the artist, capable of an agreeable effect. It would be easy to multiply illustrations, but I will confine myself to two or three simple instances derived from that land of art, Italy. At the entrance to the Incurable Hospital at Genoa, some local circumstances compelled the adoption of an indirect line, the public street not being at right angles with the direct line of access to the interior. So far from ignobly submitting to this as an inevitable awkwardness, the architect struggled, successfully, to give an apparent, as he could not give a real, symmetry to his plan, by a picturesque contrivance.

To descend to a still humbler illustration, I would adduce an instance occurring at a small, unpretending house at Boulogne. In a straight passage of moderate width it was necessary to rise 4 or 5 feet. The obvious and prosaic course to adopt was to place so many parallel steps across the passage; but such an inartificial mode of proceeding would ill accord with the æsthetic views of an Italian artist of the sixteenth or seventeenth centuries. He accordingly broke his flight of ten steps into two flights of five steps, with an intermediate landing, at which landing he introduced two short portions of ornamental balustrade, thus giving these few steps a positively ornamental appearance, and really assisting the person passing by affording an intermediate means of support.

A third example I noted at a convent in Rome. Here Bernini, whose principal aim at all times seemed to be to avoid insipidity at any cost, entailed, it is true, by the arrangement shown on my sketch, a constant source of inconvenience upon all succeeding ages, as long as the stairs may last; but he achieved his great object of avoiding the abhorred simplicity of a straight flight, and produced a pictorial effect with very small means and in small compass.

These few trifling examples are suggestive; they tend to show that a really inventive talent may find occasion to display itself, even in matters of a very insignificant and unobtrusive nature.

I hasten now to enter the apartments towards which we are proceeding. But first let us parley for a few minutes on the corridor that we have to traverse before we enter them.

Good taste, and, indeed, common sense, seems to suggest that the architectural aspect of a passage should be somewhat conformable in style and treatment with the more important object to which it leads, be it church or chamber. The eye and the mind would thus be, as it were, prepared for, and attuned to, the subject upon which it is about to be exercised; care, however, always being taken to keep this passage subordinate and subdued, so that there may be no risk of disappointment. Many modes present themselves of giving architectural effect to this passage: variety of light and shadow is an important means of doing so; we all feel the beautiful effect of this variety in natural scenery, those glimpses of sunshine, those alternations of gloom and cheerful daylight, so charming in a forest scene; and analogous effects are obtainable in our own art. A long passage may be much relieved of its length by a judicious breaking up of the vista with alternations of *chiaroscuro*.

With the same object in view of diverting the attention and relieving the monotony of a long corridor, we may with advantage place some object of interest for the eye to dwell on, such as a picture or a piece of sculpture, at its termination, or at a turn in its course.

The most beautiful passage in the world is, probably, that which Raffaelle executed at the Vatican. Independently of its frescoes, the protions of its piers and arches give it unspeakable grace; yet, beautiful as it is, the subordination to which I have just adverted has been so well observed, that the stanze, to which the loggiæ give admission, lose none of their interest by the contrast. Whilst on the walls and vaulting of the loggiæ are depicted those graceful arabesques and playful ornaments, the walls of the stanze, to which it leads, bear some of the grandest masterpieces of the genius of painting.*

MARC ISAMBARD BRUNEL.

GENIUS is a fearful gift. Its pleasures and its triumphs are intense; but so are its pains and penalties. Men of genius dwell, as it were, in a world of their own, apart from the worldly life; and there are few among the gifted who can fully enjoy both worlds. Genius is not incompatible with worldly wisdom, but it too often aims at independence of it; and sorrows and difficulties are the sure result. The imprisonment of the elder Brunel when his business at Battersea fell into confusion; much of the pecuniary shortcomings and shabby treatment of the Government; and many other worries and annoyances of his life; though by no means attributed by his biographer to any defects in the idiosyncrasy of Brunel himself; are far too like those so frequently experienced throughout the lives of eminent men of genius to be altogether ascribable to the defects of others. The very daring of his own inventive faculty, as in the case of the Thames Tunnel; and perhaps a hasty impatience of maturization in details, must have aided not a little in bringing down upon his devoted head much grief and annoyance. He himself declared that if he had another work of a similar kind to do he would do it differently. This, it is true, might have been said by any other engineer; but it was characteristic of the man; as well as of his gifted son; who, we dare say, had he had another *Great Eastern* to launch, would have done it, too, differently. However, in future time, so far as regards the Thames Tunnel, although it may continue to be an interesting question how it was done; and criticisms as to better ways of doing it may still be urged; the great inquiry will be, who did it? And the name of Brunel, and the skill and daring of the work, will be all that posterity will care to think of, in regard to it; at a time when the "Thames Tunnel Company," its immense outlays, and its failure as a commercial speculation, will be all forgotten.

Marc Isambard Brunel† was born at Hacque-

* To be continued.

† Memoir of the Life of Sir Marc Isambard Brunel, C.E., V.P.R.S., &c. By Richard Beamish, F.R.S. London: Longmans & Co. 1862.

ville, in Normandy, in 1769. His father designed him for holy orders; but the bent of his genius attracted him much more strongly to the carpenter's shop and the wheelwright's yard of his native village, than to its church or chapel.

"At a period when most children can scarcely manage an ordinary knife, young Brunel was familiar with the use of the greater part of the tools found in a carpenter's shop; and so inveterate was his love of such tools that he has been known to pawn his hat that he might possess one newly exhibited in a cutler's window at Rouen, though at the time unacquainted with its special use. At the age of twelve he constructed various articles with as much precision and elegance as a regularly educated workman."

It was a curious coincidence in his history, that, even while a boy, and from seeing some great cast-iron cylinders for a steam-engine at Rouen, which he was told had come from England, it became a chief desire of his life to visit this country; and that on this, his fixed idea and his destiny, a few years afterwards, the still stronger passion of love was brought to bear. England, being in want of him we imagine, sent over a powerful messenger to fetch him; in the form of a young lady, fitly named "Kingdom;" and, in Brunel's susceptible heart, "the United Kingdom" became thenceforth the ruling passion of his life. French revolutionary troubles, however, led to a change of affairs, which must have reduced poor Brunel to a hopeless state of despair that he should ever be united to Miss Kingdom; for he was obliged to fly hastily from his country in a vessel bound to America; and the lady in question, by an odd vicariousness of sacrifice, was seized and imprisoned, and every day expected to be guillotined,—not because she had seduced the affections of a valuable French citizen, and was destined to deprive his country of his future services for ever,—but simply and merely because she was an Englishwoman.

In America, Brunel's active mind and superior attainments soon found employment: nothing seemed to be beyond the universal grasp of his genius. Musical instruments, models of vessels, and the quadrant, had all been subjected to his improving hand and mechanical skill. He was engaged in projecting canals, in evading falls, and in removing obstacles to navigation in the beds of rivers: indeed, he may be considered as the pioneer of those great inland communications which have tended so largely to promote the commercial prosperity of the States. His design was accepted for the Congress House at Washington; and the theatre at New York was built from his plans: to him, also, America was indebted for a cannon-foundry; of which it is said, he organized an establishment for casting and boring ordnance that, from its novelty, practicability, and beauty, was considered at that time unrivalled, and was in itself sufficient to place its originator in the foremost rank of mechanical engineers. Mr. Brunel, however, found that he had to struggle with difficulties in America, and that the remuneration was not equal to his labours; but probably the strongest motive of all was a very different one, which led him, finally, to desert the rising America, repudiate revolutionary France, and turn his attention and his face to England. Here he arrived in 1799. His reputation had preceded him; and he was almost immediately engaged in works under Government; and especially in connexion with his block machinery; the invention of which Mr. Beamish has strongly and successfully vindicated for Brunel against recent assailants, who attempted to claim the chief merit for Sir Samuel Bentham.

Brunel was not long in securing Miss Kingdom, who had brought her head safely over with her from France, and had not forgotten the young Frenchman. They were married very shortly after his arrival at Falmouth; and nearly half a century afterwards he declared that "he was indebted to his wife for all his success in life." The honeymoon had scarcely waned, however, when he made love to another lady,—namely, the genius of invention, to whom he was no less devoted than to his wife. The first fruits of this devotion consisted in a duplicate writing-machine, which he patented. This was quickly followed by another for twisting cotton-thread and forming it into balls, for "Performing the operations of hemming, whipping, or otherwise securing from ravelling the edges of trimmings cut in narrow slips," which would seem to have been the true pioneer of the sewing-machine. A card shuffling-machine was another of the many inventions emanating from the extraordinary fertility of his brain. The block machinery, however, outshone all these in ingenuity and importance, as well as utility. In 1802 it was completed; but, although it effected all that Brunel promised; ten men, by its aid, doing better work than could be done without it by one hundred and ten; the inventor was long left unrewarded; and the distress to which he was reduced, while the country was saving many thousands annually by his invention, seriously affected his health; and he had an attack of nervous fever, during which the bleak prospects of his family appeared to be his chief source of anxiety. At length, in 1810, he received 17,093*l.* for his invention; and this vexatious pecuniary dispute being thus adjusted, he was free to turn his attention to other inventions,—all ingenious, and the majority of them highly useful. His shoe-making machinery was amongst these. Government gave him a large order, for the very superior shoes he made by this machinery, for the army; but unfortunately for Brunel, after he had prepared further machinery to supply the whole army, and had produced an immense stock of shoes, the war ceased, and he was again plunged into financial difficulties. How it was that cessation of the war prevented the army from wearing shoes it is not easy to see; although there might be less marching and fewer dead men's shoes lost in battle; but Brunel had mixed up his shoe-making business with another of his valuable machines,—the steam saw-mill, which he and his partners carried on at Battersea; and the whole affair got into an inextricable mess, which led to poor Brunel's imprisonment in the King's Bench prison, where he seriously meditated a new emigration,—namely, to Russia; instigated thereto, as so many others of our eminent men have been, by the nobly enticing efforts of the Russian emperor.

Government, however, at last came to his rescue, with a sum of 5,000*l.* for the discharge of his personal liabilities.

From that period till the opening of the Thames Tunnel, on the 25th March, 1843, Brunel was incessantly engaged in the exercise of his profession; evolving original conceptions, improvements on old contrivances, and propositions for novel enterprises, in unprecedented and inexhaustible profusion. We need only mention a few of his inventions; such as his machine for cutting veneers, his circular-saws, machinery for bending timber, improvements in the treadmill, &c.; but our space now only permits us to say a few words as to the greatest engineering work he ever did,—namely, the Thames Tunnel; and for which, and in which, he received the highest honour conferred on him at the hands of majesty—his knighthood. To give any adequate idea of the labours gone through, the mishaps, and the conquering of difficulties, in carrying out this great work, would require something like the large space Mr. Beamish, who was one of Brunel's own assistants in the construction of the tunnel, has devoted to it; and this we cannot, and indeed to many of our readers we need not, attempt.

Various abortive endeavours had been made to cross the Thames by a tunnel; and the difficulty in the way of the accomplishment of such a work must have had a special fascination for such a mind as Brunel's: his thoughts had been constantly directed to the subject, when one day,—

"Passing through the dockyard (at Chatham, where he was employed by Government), his attention was attracted to an old piece of ship timber which had been perforated by that well-known destroyer of timber—the *Teredo navalis*. He examined the perforations, and subsequently the animal. He found it armed with a pair of strong shelly valves which enveloped its anterior integuments; and that, with its foot as a fulcrum, a rotatory motion was given by powerful muscles to the valves; which, acting on the wood like an augur, penetrated gradually but surely; and that, as the particles were removed, they were passed through a longitudinal fissure in the foot, which formed a canal to the mouth, and so were engorged. To imitate the action of this animal became Brunel's study. 'From these ideas,' said he, 'I propose to proceed by slow and certain methods; which, when compared with the progress of works of art, will be found to be much more expeditious in the end.'"

Such was the leading idea which induced Brunel to undertake a work which for cost, calamities, and indomitable labour and perseverance, exceeded all expectation. Five times the water broke into and deluged the work; and at one time it was stopped for years (from 1828 till 1835), on account of both the breaking in of the river and the low ebb of the company's funds. Government then advanced 246,000*l.* to the Tunnel Company; and, notwithstanding repeated incursions of the river, and annoyances and hindrances with explosive and poisonous gases, &c.; on 7th January, 1842, "the work was entirely secured;" although the staircase had yet to be built and the approaches completed; so that the opening ceremony did not take place till 25th March, 1843. The work had thus cost the labour of eighteen years and thirty-eight days; nearly half a million of money; and several lives.

Brunel had now done his life's work. Paralysis succeeded to superhuman energy and invention; and in six years he expired, but at a good old age; having lived to see his 81st year.

To the natural benevolence and goodness of Brunel's character Mr. Beamish pays a just tribute, as well as to the quiet simplicity of his habits, and his carelessness of ostentation or worldly greatness.

The whole work is pleasantly written; and it has had the great advantage of an author possessed of a professional knowledge, and well versed in business details.

THE LEONINE CITY: VATICAN.*

ROME may be considered as three distinct cities, each inclosed by its own walls of as many distinct ages: the largest of these, including the great bulk of the population, occupies what was in olden time the Campus Martius, and the Seven Hills: its walls, beginning at the Tiber, near the Flaminian gate, and ending again with the river below the Porta Ostiensis, date from the period of the division of the empire between Arcadius and Honorius, towards the close of the fourth century. I remember some years ago to have read a paper on the walls and gates of this seven-hilled city, and I have no intention now to recur to any thing on that side of the Tiber. Let us call this *Urbs Roma*, or "the city."

The next portion, the Trastevere, is the Southwark of the metropolis. The walls of Honorius originally inclosed little more than the space covered by the Arx Janiculensis. They are now partly demolished and partly in ruins, being rendered useless by the modern inclosure of Urban VIII., A.D. 1630. Those Barberini walls begin near the Porta S. Spirito, and run up to the long ridge of the Janiculum, inclosing the extensive villas Lanti and Corsini, culminating at the Porta S. Pancrazio, and descending again to the Porta Portese. They very well parried the siege of Rome by the French army in 1848, and are now prepared for another in case of necessity; but neither do I intend to speak of the Transtiberine city which is defended by the walls of Pope Urban VIII. But there is yet a third city which has its own walls and gates, and claims a history of its own, belongs especially to the Popes, monopolises the Vatican Mount, contains the great temple of Christendom and the palace of the sovereign pontiff, and, though not more than three miles in circuit, may yet be destined to become an empire of itself. This is the city to which now all eyes are turned, and on which the eyes of Victor Emmanuel are *fixed*. I propose to offer you a history and description of this papal or Vatican City.

The appellation of Janiculum may be applied to the whole range of hills extending from the Montorio to the Monte Mario, inclusive; but the "Vaticani Loci" do not properly reach beyond the vineyard of S. Onofrio; the heights which rise behind the basilica of St. Peter and above the pontifical palace form the "Collis Vaticanus." In the days of Imperial Rome, this hill was covered with vineyards, producing a very bad wine, which they called Vappa. If etymologists may be trusted, it would seem that the spirit-rappers and table-turners held their happy mediums here, for both Aulus Gillius and Sextus Pompeus combine to persuade us that the hill derived its name from *Vates* or *Vaticinia*, which just means the fortune-tellers and necromancers of ancient days, whose progeny will never die out as long as credulity and ignorance survive to feed them. The hill of prophecy, however, was accounted the most unhealthy district beyond the Tiber, where, as Tacitus tells us, the mortality was the greatest. The tradition that St. Peter was both crucified and buried in the Vatican, invested this once sickly region with a sanctity which we need not seek to disparage. As early as the age of Constantine, a large temple in the form of a basilica was erected where Anacletus, Bishop of Rome, had constructed his oratory over the traditional sepulchre of St. Peter, A.D. 306.

But this basilica stood alone, and was not inclosed, nor any part of the Vatican hill, until the year 848; and I am now to tell you how this most magnificent suburb of Rome first became a city. After the dominion of the Goths and the ravages of the Lombards had ceased to keep Rome in terror, a new danger arose in an unexpected quarter. The Saracens, who had established themselves in Sicily, infested the coasts of Italy, and, ascending the Tiber, plundered the basilicas of St. Paul and St. Peter, which lay open and exposed to their depredations. Leo III. began,

* Read by the Rev. R. Burgess, B.D., as elsewhere mentioned.

in his pontificate, to build walls about St. Peter's, but it remained for the magnanimous Leo IV. to effectually fortify Rome against the incursions of the infidels. About the year 731, we find something like a republic established under the influence of the Bishop of Rome. It was entitled the Roman Duchy. France, in the persons of Charles Martel and Pepin, successively saved Rome, and established the Popes Stephen II. and Gregory III. in their temporal power; and from that time the Popes began to act for themselves as sovereigns, until they were overpowered by the successors of Charlemagne. The first great and independent work of a secular kind executed by papal power was the city I am about to describe, and which the Pepin of the present day still defends, with all it contains, against the Lintprands and Garibaldis of the nineteenth century. In the year 848, then, Leo IV. resolved to restore the walls of Rome, especially on the right bank of the Tiber. He rebuilt fifteen of the ruined towers, and that the work might be done speedily he himself visited the walls sometimes on horseback, sometimes on foot, and after putting the old walls in a proper state of defence, turned his attention to fortifying the Vatican Basilica. The revenues of the Duchy of Rome were not sufficient. He applied to the Emperor Lotharius for help, and his majesty responded, not by sending him an army to take care of him, but ordering many pounds of silver to be paid to the enterprising pontiff. Not knowing how soon the Saracens might renew their destructive invasions, he pushed on his works; sent for labourers from every city, farm, and monastery, within the Roman duchy, and in four years the walls were complete, and this was very properly called the Leonine City, a name which was preserved until the sixteenth century, and is still used to designate the city of the Pope. I will not stop to describe the ceremonies with which the walls and bulwarks of this new city were inaugurated. Bishops and priests, and all orders of the clergy, with bare feet, and their heads sprinkled with ashes, made the circuit of the walls, singing litanies, psalms and hymns, and canticles, while the cardinal bishops sprinkled the walls with holy water. Anastasius, who lived near that time, has preserved a record of the solemnities, and has told us of three gates. One was called S. Peregrino, because it faced the church of that name; the other towards the Fort S. Angelo, was called Posterula, or Little Gate S. Angelo; the third was also a posterula, called Saxonum. The ceremony of inauguration ended in a liberal distribution to the Romans and strangers who were present on the great occasion. This passage of Anastasius is valuable as furnishing an example of the ceremonies which were observed in the dedication of cities in the ninth century. Now, of those original walls dedicated in the year 852-3, two sides of the quadrilateral figure remain almost entire, and with the aid of Bufalino's plan of Rome, published in 1551, we can see what the Leonine city was before it came into the hands of Sangallo, under Pope Pius IV. The first side, one of the long ones, is almost entire, except where it is broken by the Pontifical palace; the portion of it which runs from the Fort S. Angelo to the palace, was transformed by Alexander VI. (Borgia), into a corridor of communication between the Vatican and the castle. Here we place the first angular point of the Leonine city. Resuming the line of wall after its interruption by the invasion of the Vatican staircases and corridors, it runs up to the summit of the hill, and terminates in the round picturesque tower, called the Torre dei Venti, which is now inclosed within the enlarged circuit of Pius IV., and which we will soon describe. The whole length of this first side is 916 geometrical paces. From the tower the walls turn at a right angle, and continue in a straight line until they are joined by the modern walls at the Porta Pertusa, where another round tower, not so conspicuous as the former, rises, and indicates the third angle. This western side of the quadrilateral is only 1,000 feet in length, equal to 250 geometrical paces. The third side, nearly parallel with the first, is now, in a great measure, thrown down, but there remain vestiges of it which may be traced for about 250 feet from the Porta Pertusa; and again at the Porta Cavalleggieri, where the walls coincide, and, in fact, form part of the present circuit. The construction called Saracenic is immediately recognized as being similar to all the rest of these Leonine walls. The Saracens impressed their hated name upon a kind of masonry which really existed long before these fierce warriors were heard of. Specimens now exist in Hadrian's Villa, near Tivoli; it consists of small parallelepipedons of stone. In the Leonine walls the stone is granular, and was no doubt taken from some of the quarries in the neighbourhood. Another specimen of this *opus saracenicum* is to be found near S. Sabina, on the Aventine Mount, the work of Pope Onorius III., in the thirteenth century. This is a considerable improvement upon the *opus mixtum* of which I exhibit two specimens; the one is taken from the interior of a sepulchre on the Via Nomentana, near the bridge over the Anio; the other from the Circus on the Via Appia, to which I hardly venture to give a name, lest some disputatious antiquary may rise up and contend for the traditional name of Caracalla. We now pursue our wall, rendered invisible by more modern works, until we come to the Tiber, behind the church of S. Spirito, and at the bridge now destroyed to its foundations, commonly called the "Pons Triumphalis," but which is marked in Bufalino as "Pons Vaticanus;" and if ever it should be rebuilt for the mutual convenience of the King of Italy and the Pope to confer together on secular matters, I hope the name "Pons Vaticanus" will prevail: and no triumph for either king or pontiff. The length of this third side measures 4,000 feet, or 1,000 geometrical paces, and is therefore longer than its parallel by 334 feet. Here, however, must be found the third angle of the city of 852, and the fourth side, which completes the figure measures, like its parallel, 1,000 feet. The result of these measurements will give to the first Papal city a circuit of nearly two miles; and within this space 105 popes in succession were content to live before Pius III. began to think of enlarging the tent, to make more room for St. Peter's shrine, and for the comfort and splendour of his successors.

The Leonine City had originally, like the city of Romulus, three gates; and if I should attempt to fix their several positions, and insist upon names, it would be as weary a chase as it has been after the gates of the original imperial city. It is remarkable how antiquaries and topographers get puzzled about the entrances into old cities. What battles have been fought over the gates of Servius Tullius! Who can reconcile the walls of Honorius with the walls of Aurelian? The common-sense solution of the question seems to be this, that when the number of inhabitants increased there wanted more accommodation for going out and coming in. On the return of the Popes from Avignon the Leonine City received continual accessions of inhabitants, they settled in the part nearest the river, and beyond the ditches of the fort; the three old gates were insufficient, and one of them, at least, inconvenient. More were added with new names until the old nomenclature which seems to have little meaning was swamped; it cannot be of much consequence to investigate this dry subject which no ingenuity can make moist, but by reference to Bufalino's plan of Rome, we can with comfort see all the gates as they then existed, that is before the Papal City assumed the outlines it has now preserved since the days of Pope Pius IV., 1562, at that period when Pope Paul III. (Farnese), had done his part, there were six gates and two posterns in use, and all that part of the city which lay between the Fort S. Angelo and the Piazza S. Pietro was thickly inhabited; but it still remained as a separate city. The Porta S. Spirito, which led out into the Lungara, was a full mile distant from the P. Settimiana in the walls of Aurelian, and all that lay between was uninclosed whatever alterations or additions were made by the popes, from Alexander VI. (Borgia), to Clement VII. (Medici), they were all confined to the old Leonine City, until at length Paul III. commenced and Pius IV. completed the present walls and bastions, and Sixtus V., 1588, erected the whole into a 14th Ward or Rine of Rome called until this day the Borgo.

The Leonine City, from the very strength of its bulwarks, seems to have attracted the besiegers. Only forty-four years after their erection Arnolfus, Emperor of Germany, came against the city, and took it by assault. Pope Formosus was obliged to comply with the emperor's demand, which was that he would crown him as Charlemagne had been crowned nearly a century before; and, having obtained that blessing, which other emperors of the present day would like to have, Arnolfus returned home after a residence of fifteen days in Rome. A second capture of the city took place in 1063, effected by a nocturnal assault of the Anti-Pope Cadolo. Henry IV. and the ferocious Robert Guiscard, in 1084, did much damage to the Leonine City. Frederick Barbarossa did not improve it. In 1157 the Roman Senate found it necessary to make a general reparation, which lasted until Pope Nicolas V., 1452; but the last and most disastrous attack upon this ill-fated city was that of the Constable Bourbon, in 1527. The Colonnas, with the aid of the Viceroy of Naples, got possession of the city on the 22nd of September, 1526, and sacked the palace and Vatican Basilica, and a considerable portion of the Borgo, as fiercely as either Vandal, Goth, or Saracen. This war was caused by Pope Clement VII. having allied himself with the French against Charles V. The Duke of Bourbon was the *condottière* of the armies of that emperor. Having marched against Rome, he assaulted the Leonine City on the 6th of May, 1527; and, in attempting to scale the wall near the Porta S. Spirito, he was killed by a ball from an arquebus on the spot: the troops, nevertheless, turned towards the main city, passing the Ponte Christo; they plundered the houses of the inhabitants, putting to death several thousands of them, and committing the most unheard-of atrocities. The booty was said to amount to the value of six million pieces of gold. This was the most calamitous event that ever happened to Rome. Its horrors are described by Guicciardini and others, and the details of the assault upon the Leonine City acquire additional interest from the quaint but lively description of Benvenuto Cellini. He was an eye-witness of the siege, and it is even said that the ball which struck the Bourbon was shot from the hand-gun of Benvenuto Cellini. He ended by believing the story. This was the last siege and sack of Rome until 1848, when the proceedings were milder, and the defenders properly killed, according to modern improvements; and it is not a little remarkable that those two calamities, separated from each other by more than 300 years, should both have arisen from the French assisting the Pope against the German Emperor; but there is yet a Bourbon in Rome to renew the sorrows of 1527.

When Sir Walter Scott was in Rome, a little time before his death, it was observed that he took little interest in the ruins of ancient Rome, but was delighted with his visit to the Bracciano Castle; but that which most excited his curiosity was to find out the spot where the Duke of Bourbon was killed in scaling the walls. I believe they took him altogether to a wrong place; and, instead of showing him the Porta S. Spirito, led him to the corridor of Alexander Borgia, near the fort S. Angelo.

We are now prepared to contemplate an extension of the Leonine City, which, properly speaking, should cease now to be called by that name, because all that remains of those old Saracenic walls is found within the subsequent works of Sangallo; and, having lost their original use, are now become the dusky but picturesque ornaments of the Papal gardens.

Paul III. was pope from 1534 to 1549. He resolved to surround the Leonine City and the Vatican with new walls, and he committed the great work to Antonio da Sangallo: he commenced the fortifications on the side of the Porta S. Spirito, but a dispute having arisen between the engineer and the architect, Michelangelo, the work was interrupted, and was not completed until the reign of Pius IV.; indeed, the Porta S. Spirito still remains unfinished, *in memoriam*, as if it was meant to immortalize the proverb—"Every man to his trade, sir." Vasari, who was, of course, on the side of his master, Buonarotti, in the quarrel, has narrated all the circumstances in his "Life of Michelangelo." (Volume XIV. of his works.)

"Pope Paul," he says, "had made a beginning to fortify Borgo, and he brought together many signori to meet Antonio da Sangallo, and desired Michelangelo also to be present, for he was aware that the fortifications made about the Mount St. Miniato, at Florence, had been planned by Michelangelo. After much disputation he was asked to give his views; and, although he was of a contrary opinion to Sangallo and several others, he frankly told them all what he thought. Upon this Sangallo said to him that his business was sculpture and painting; not fortification. Michelangelo replied that he knew very little of the art of sculpture and painting, but as to fortification he had made it a study for a long time; and that, added to his practical experience, led him to think that he knew more about it than Sangallo and all his friends put together. At the same time he pointed out, in presence of the whole meeting, several mistakes in Sangallo's plans, and the altercation got to such a height that the Pope was obliged to impose silence upon them both. And, not long after, Michelangelo brought his designs for the fortifications of the whole Borgo, and took care of all that was already planned and done after; and this was the reason why the bastion and great

gate of S. Spirito, which was near the commencement, remained unfinished. As far as we can learn from this, it would appear that the dispute was as to the merit of the invention. The science of modern fortification was then in its infancy; none had been erected since the invention of gunpowder: the upright towers, connected by curtain walls, were no longer able to resist the new engines of war; and, although the quarrel between the two great geniuses of the day had suspended the works in the Vatican, Pope Paul III. recompensed Sangallo by employing him to raise the splendid bastion which now exists between Porta Appia and the Ostiensis, to which Sangallo gave his name for a memorial. Engineers of course repair to this first specimen of modern fortifications, and not the less all that portion of the city walls which defend the south part of the Aventine Mount, and secure the gate of St. Paul. The bastion of St. Gallo is worth a sketch. Sangallo died in 1546, leaving Michelangelo a clear coast, who lived until 1563. We may infer from subsequent events, that these two first-rate men were reconciled before the final separation. They were both employed about the Farnese Palace. Nevertheless, the fortifications round the Leonine City stood still for near a quarter of a century, and Sangallo had no more to do with them. Pius IV. took up the suspended work of his predecessor, impelled thereto by the incursions of the Turks, who had at that time begun to ravage some parts of Europe, and threatened destruction to Rome itself. On the 8th of May, 1561, the Pope laid the first stone of his new walls, and adopted the plans of Michelangelo, now near the end of his career. It may not be uninteresting if we pause here for a few moments to look at the modern distinctions of kindred professions,—distinctions from which no doubt the arts and sciences have gained greatly. It is evident that, in the revival of the fine arts of the Cinque Cento, great masters often invaded the provinces of each other. Raffaelle is put down among the architects; so is Peruzzi, of Sienna. Several others figure in the lists of both painters and sculptors. Michelangelo, as we have seen, planned the fortifications of the city of Pius IV.; and Sangallo designed the Palazzo Farnese; but neither of them carried their own plans into execution. Neither of them was the right man in the right place; but there can be little doubt that, if the two great rivals in civil engineering (before the art was well understood, both of them equally engaged by Paul III., as architects), had lived in the nineteenth century Michelangelo would have had the Great Exhibition, and Sangallo would have got Portsmouth; but, as I have said, professional distinctions were not then very much defined, and we must admit that Michelangelo was a striking instance of an engineer successfully attempting a palace. But, gentlemen, this anomaly in professional services comes down much later than you imagine. Lord Macaulay tells us that as late as 1685 most of the ships that were afloat were commanded by men who had not been bred to the sea. No state, he says, ancient or modern, had before that time made a complete separation between the naval and military services. Pompey and Agrippa fought battles by sea as well as by land. At Flodden the right wing of the victorious army was led by the Admiral of England; and even after the Restoration the same system was followed. Great fleets were intrusted to Rupert, a daring cavalry officer; and when General Monk once wished his ship to change her course, he moved the mirth of the crew by calling out, "Wheel to the left." There were naturally some professional blunders when men undertook too much. These were days in which neither the art of war nor the art of navigation made it so necessary to draw a line between two professions which had hitherto been confounded; but now one, at once and for all, is enough to occupy a single mind. The arts of peace as well as the arts of war now claim an undivided attention for their respective departments, and the only way to succeed in these days is to stick to one's text. There may be a comprehensive genius who may rear with equal success a Palladian palace or a Russian fort; but it happens to few, and, as a general rule, it is safe to be warned by the venerable axiom, *Ne sutor ultra crepidam.*

Paul IV. died in 1566—that is, five years after resuming the left-off walls of his predecessors; but the work was not completed until Pius V. He employed in the finishing a number of Turkish captives taken at the battle of Lepanto, 1571; but the circuit never went beyond the gate of the S. Spirito. As it stands now, firm and unshaken, it is three miles round. The gate near the Fort S. Angelo is closed. The Porta Angelica gives access to the Borgo from the roots of Monte Mario and the north. The Porta Pertusa—called also the Vindaria, because it led into the papal gardens—is now shut up. The Porta Fabrica, so called because it was convenient for approaching on the southern side of the Basilica, and the Cavalleggieri, because it was near the quarters of the pope's body-guard. Such is the present circuit of that magnificent city, marked out with admirable prescience just three centuries ago to be the seat of an empire which none can envy, and an abode of splendour which all must admire. The city I have described is complete in itself; it has thirteen principal streets, besides lanes and alleys, and open spaces; it contains twenty churches or chapels, independent of sisterhoods, fraternities, and charitable institutions; it has eleven palaces, ample and sufficient for foreign ambassadors. It contains the never-ending compartments of the great museum, the pontifical palace and gardens—

> "The dome, the vast and wondrous dome,
> To which Diana's Temple was a cell."

It may still have its Girandola and two fountains, with the courts and offices of the Holy Inquisition, and the magnificent colonnade, in the centre of which stands the monolith we want to imitate; and there is a peaceable and devoted population of more than 3,000 souls loving to dwell under the shadow of the Loggia Vaticana for an occasional benediction. Who, after having known the vicissitudes of all the Piuses up to the eighth, would not desire to be the ninth. Pius III., IV., and V. consumed their days in building walls and fortifications. Braschi Pius VI. was driven, for protection, to Vienna; Pius VII. was a captive in the hands of the first Napoleon; Pius VIII. was in Paradise in two years; but the last of the name has had the offer of a city and vast revenues, and no one to interfere with the canonizations of twenty-five Japanese martyrs; but these matters do not belong to us, who do not come here for building walls against which to run our heads, but to draw a line of ancient fortifications which will secure all contending parties within their own limits.

There stands within this city, of which we have now given the history and description, an object which, like others of its kind, has recently acquired additional interest; of course, I mean the obelisk in front of St. Peter's. As we are, by favour of the Institute and its generous president, to have a reprint of a paper, and discussion thereupon, with regard to obelisks at Rome, it would be unpardonable in me if I were now to inflict upon you a dissertation by way of appendix to my Leonine City. But a few words, perhaps, will be allowed me in collecting all the information we can as to the mode of erecting those monoliths which are now standing. Perhaps the Vatican obelisk affords most for our purpose. First, it is the largest mass of granite at Rome, except one, that of the Lateran; its weight was calculated at 331 tons. The length of the shaft is 80 feet 9 inches, the width at the base 8 feet 4 inches, contracting to 5 feet 8 inches at the pyramidion; if the basement and ornament at the top be included, the entire height is 127 feet 6 inches, which, I presume, will be about our affair. In the next place, it is not a genuine Egyptian obelisk; it has no hieroglyphics upon it; and we are not aware of the existence of any unsculptured obelisk ever erected in Egypt. The reading of Pliny is not received by critics; the text is manifestly corrupt, and there can be little doubt but it was cut by order of Caligula, in the quarries of Syene, and dedicated to the memory of Augustus, but actually set up on the Spina of the Circus of Nero. From that destination it was never moved until Sextus V. had it conveyed to where it now stands; four months were consumed in moving it 300 yards; you all know how and by whom the great work was effected. We shall want a Fontana and vast quantity of ropes, when we have found the granite mass. We cannot hope to reach the large grained red quarries of Syene, in upper Egypt. You are aware that Syenite is distinguished from common granite by having hornblende in the place of mica; it will be impossible, perhaps, to obtain the warm red granite which we generally associate with the idea of an obelisk, but if any of our native quarries can produce a fair specimen of the obelisk material, and any of our native geniuses set it up in its place as a memorial to all generations, we shall be proud of the achievement, and successive generations will learn in that stone that the memory of the just is blessed.

COPYRIGHT (WORKS OF ART) BILL.—This bill has been read a third time and passed by the House of Commons.

STEWKLEY CHURCH, BUCKS.

GALLERIES AND PEWS.

MOST of your readers are probably acquainted with this interesting church, either from actual inspection or from the engraving of it in Lysons. Its history is also well known as part of the history of art in this country. It is the sister church to Iffley, built on the same plan, in the same style, and probably by the same architect, as both churches were given about the same time to the Priory of Kenilworth. Hitherto, for 700 years, Stewkley Church has been fortunate enough to escape any alteration; and it is consequently the most perfect example of a rich Norman church of the middle of the twelfth century that we have remaining in England. But after escaping the perils of the Reformation in the sixteenth century, the great Rebellion of the Puritans in the seventeenth, and the ignorance and apathy of the churchwardens of the eighteenth; it is about to fall, in the nineteenth, under the hands of modern fashion, which has been more destructive to our old parish churches than all the others put together. The west end is to be pulled down, and the nave lengthened 15 feet, or one bay; on the pretext of making more room; but in reality to get rid of an ugly western gallery, which holds in fact more people than the proposed new bay of the nave will hold, and is nearer to the desk, the pulpit, and the altar. This gallery is to be got rid of as an eyesore, and in compliance with the well-known *dictum*, that "it is impossible to pray in a gallery." This *dictum* I believe to be absolutely false: as matter of fact, a person who is really disposed to pray will not be hindered from doing so by the accident whether he is placed in a gallery or on the floor. This *dictum*, then, is mere cant or affectation; and it has been, in practice, one of the most mischievous of all the dictations of modern fashion. The large gallery at Stewkley is an ugly thing which I should abstractedly be glad to see removed; but it is a mere piece of scaffolding, removable at any time when funds are forthcoming to build a chapel-of-ease, or schoolroom chapel, in another part of the parish, to hold the people now contained in the gallery; and the venerable structure would still remain intact.

The circular, which is issued for the purpose of obtaining money under the pretext of accommodating a larger number of worshippers, states that the parish is three miles long, and the population 1,500, while the church accommodation is only 200. Surely this is a strong case for a chapel-of-ease, and not for a mere temporary make-shift, which would destroy the original plan and proportions of the old church for ever, whilst the next incumbent will still cry out for a chapel-of-ease. This gallery hides nothing but a part of the small west window, the head of which is seen above it; and a small part of the top of the two side doorways; which would be avoided altogether by raising the front of the gallery about a foot. It seems to me just a case where a Mediæval architect would have shown his skill by making this useful gallery an ornamental feature. This was the great glory of the Mediæval architects. They never shirked a difficulty, but made useful things ornamental also. The modern fashion of abusing all galleries appears to me to be carried to an absurd length. Galleries of several kinds were freely used in the Middle Ages, and were no dissight to the building. The triforium gallery of Westminster Abbey is not an ugly feature, nor the Norman galleries across the ends of the transepts of Winchester Cathedral, which would be equally applicable for a western gallery. The cathedral of Frankfort-on-the-Maine has galleries round three sides, part of the original design of the church, built of stone, in the best period of Gothic art, always intended for worshippers, and still in use. The numerous rood-lofts in our parish churches in Somerset and Devon are not ugly features, and yet they are galleries to all intents and purposes: loft is only another name for gallery.

But I had almost forgotten another grave and serious objection to the western gallery at Stewkley. When people first come into the church they will not be able to see the new roof which is to be put on the nave, and in which the original high pitch is to be *restored*, in compliance with another modern prejudice. That the outer roof at Stewkley was high-pitched is plain enough from the weather-moulding remaining on the tower; but it by no means follows that the high roof was open to the rafters within. It is far more probable that the nave was originally covered by a flat ceiling, painted, in the style of the one we have remaining at Peterborough; and which Mr. Burges has had the spirit

and good taste to adopt as his guide at Waltham, with remarkably good effect, as is generally acknowledged. That this was the usual covering of our Norman churches I have not the slightest doubt: it is the natural covering, and more consistent with that style than a high-pitched roof. In Italy, where the Roman style has never been discontinued, flat ceilings are almost universal; and although Peterborough is the only one that has escaped in this country, there is every reason to believe it was the usual custom here also when the church was not vaulted.

There is an eastern gallery of the twelfth century remaining at Compton, in Surrey; the front of which is engraved in the "Glossary of Architecture;" and there are traces of similar galleries at the east end of several other Norman churches, as at Darent, in Kent. This makes it evident that, if the architects of those days had wanted a western gallery, they would have built it, and have made it an ornamental feature. This is actually the case in many churches of the twelfth century in some parts of France; especially in Perigord, where the western stone gallery is the rule rather than the exception in small parish churches.

Another part of the plan proposed for Stewkley is to remove the *donkey-boxes*, and restore the open seats, to which every man of any pretension to good taste or good feeling would wish God speed. The mischief that has been done to the Church of England by the introduction of this Puritanical innovation is incalculable. These high inclosed pews may be traced to the Presbyterians of Scotland, and to the time of the Great Rebellion. This hideous and most mischievous and unchristian fashion followed chiefly the direct line from north to south, and reached across the channel into Normandy and Picardy: the eastern and western counties of England generally escaped the invasion of this plague; and for the most part still retain the fine old open seats which are peculiar to England, and are generally of about the time of the Reformation; some previous to it, others shortly after; and are the most fitting and the most ornamental furniture of God's house that has ever been invented. Those who have seen our genuine old English carved bench-ends in Somerset and Devon, Norfolk and Suffolk, will allow that it is impossible to praise them too warmly. But there is a modern prejudice against these also: nothing will go down now but moveable chairs, after the French fashion; the most ugly and inconvenient furniture for a church that ever was contrived. Those who have only a little knowledge of the Continent may admire the fine open space in the nave, when the chairs are all carefully stacked up to hide the windows of the aisles; but those who know the Continent well, and have had practical experience of the use of chairs, will be loud in condemning them. I should have thought that the English church in Paris was enough to satisfy any one of this. The miserable chairs standing at all sorts of angles, and with a second chair for each fine lady to kneel upon, which may be seen daily in most foreign churches, were found to take up so much room, that it became necessary to arrange them in rows, with deal boards nailed or tied to the back of them to keep them straight; as ugly and clumsy a contrivance as could well be imagined. Yet, to comply with this new prejudice, modern architects commonly propose either at once to introduce chairs over the whole or part of the nave of a church; or, in order to lead the way to it, make their open benches as ugly and inconvenient as they can contrive; and put kneeling-boards to them on which it is impossible to kneel for many minutes without serious pain. To my mind this interferes with prayer far more than galleries do.

Galleries were introduced into our churches in many instances by good and pious people as a makeshift; an endeavour to remedy as well as they could the evils which had resulted from the system of inclosing the greater part of the floor of God's house with large square hideous boxes for the accommodation of the few rich at the expense of the many poor. By this system the poor were compelled either to remain ignorant heathens, or to become schismatics or heretics. To remedy this as far as possible, galleries were in many instances built for the poor; and we should hesitate before we remove them until we have supplied something better. Unfortunately, the time at which these galleries were generally erected was one of extremely bad taste and great ignorance of art; and consequently they are often as ugly as stupidity could make them; and sometimes they are quite useless. In all such cases let them be destroyed whenever it is practicable without causing a more permanent and serious injury to the fabric. But a gallery is a piece of furniture removeable at any time; and in such cases as Stewkley it is better to endure it a little longer than do irreparable injury to an historical monument of importance.

If the fabric must be altered, the plan proposed may be the best that is practicable. It is intended that each stone of the west front shall be carefully marked, and replaced in the same position; and that the side windows shall be so scrupulously copied from the old ones, that in a few years' time no one can tell that the plan of the church has been altered at all. But this seems very like falsifying history. If a new west bay must be added, it would be more consistent with the professed object, and more truthful, to let it be designed and built at once of two stories; in the same manner as the domestic chapels and the almshouse chapels of the Middle Ages usually were; or as the transepts of large churches frequently were; and the west ends of churches in some districts (as already mentioned); and as they would have been in other places if the western gallery had been wanted. There is no occasion to go abroad for a model for this; it may be made thoroughly English. The manner in which some modern architects seize every opportunity to stick a bit of French, German, or Italian Gothic into our old English churches makes it dangerous to refer to any foreign examples, from which ideas might fairly be taken, if they would only be at the trouble of translating them into English, and making them assimilate with English art. One is continually reminded of that well-known *vulgar bore* in society, the man who has *been abroad* and knows a little of some foreign language, and who must be always displaying his little knowledge by interlarding his conversation with scraps of French, German, or Italian.

The incumbent of Stewkley is actuated by the best motives and intentions, and is very unwilling to disturb the fabric of his very remarkable old church; but the influence of modern fashion has been too strong for him; and, after some hesitation, he has yielded to its power. I hope it is not yet too late to make him see the barbarity of damaging an interesting page of the history of art in England; and feel that it is better to endure the eyesore of an ugly piece of scaffolding for a few years longer than to disturb the venerable fabric committed to his charge. The clergy are our natural conservators; and it is only since the spirit of change and innovation has reached them that so much irreparable mischief has been done.

JOHN HENRY PARKER, F.S.A.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE usual meeting of members was held on Monday evening last, at the House in Conduit-street.

The chair was taken by the president, Mr. Tite, M.P.

The minutes of the last meeting having been read, and several donations announced,

The President said he wished to bring under the notice of the meeting four very curious drawings, which were on the easels at either side of the table. They were made by a very distinguished antiquary, to whom he (the president) had been introduced when a boy. His name was John Carter, and he was certainly the father of all the architectural reminiscences and restorations which had led to such important results in the present time. John Carter was *par excellence* the reviser and restorer of Gothic architecture. He published two books,—one upon the architecture, and the other upon the sculpture of England. He was extensively employed by the Society of Antiquaries, and he made for that learned body a series of drawings of York Minster, large, elaborate, and complete. When he (the president) was introduced to Mr. Carter, the drawings now in the room were hanging in his parlour. One of them represented the Gothic period in its prime, in the time of Edward III., with the king, queen, and court entering a great cathedral. The drawings in question exhibited Gothic habits and manners, with the most elaborate care; and such was Mr. Carter's admiration of Gothic, that had he, like Pugin, married, he would in all probability have decked his bride in the costume of that gorgeous period. But Carter was never married. Another of the drawings represented Gothic architecture as struck down by the Iconoclasts of the Reformation. Carter was an enthusiastic Roman Catholic, and he gave a graphic representation of the manner in which Gothic religion and the manners and customs of that picturesque period were assailed by the zealots of the Reformation. Of these drawings he (the president) had lost sight for more than forty years. Carter was not only an accomplished draughtsman, but a clever musician, and a charming companion. He had the highest respect for archæologists, but a great disrespect for booksellers. He etched his own drawings, bought the paper himself, and with the assistance of his old housekeeper stitched the covers, and delivered his works without the intervention of a bookseller. Another of the drawings, now in the room, represented, it was believed, the death of Richard II.; but the subject of the fourth he had not been able to determine. The manner in which the drawings were discovered was as follows. Happening a few days ago to enter the shop of Mr. Ambrozini, of Brighton, who had an interesting collection of old china and articles of *vertu*, he found the drawings exposed for sale. He told Mr. Ambrozini what he knew of the history of them, and he requested that gentleman to send them up to the Institute, so that its members might see what Gothic architecture was in its prime, and might see what a single man could do who thought and worked alone, and by whose exertions, mainly, the revival of Gothic architecture in England had been encouraged among us. If it could be conceived that the soul of one man could enter the body of another, it might be assumed that the soul of Carter had passed into the person of Pugin. Both drew admirably; both were masters of perspective; both were Roman Catholics; and both were enthusiastic admirers of the Gothic style of architecture. The drawings to which he more particularly referred were extremely interesting, and it was just possible that somebody present might be able to say something as to their history during the last forty years.

Mr. Digby Wyatt, V.P., observed that he had seen the drawings a few years ago in the possession of Mr. Pratt, of Bond-street; but that as to how they came into his possession, or how they left it, he had no information to give. Of the interest and value of the drawings there could, however, be no doubt; and if the funds of the council were more flourishing he was sure they would have great pleasure in buying them for the library. He believed that a bookseller in Bond-street had in his possession the original drawings for Mr. Carter's work, for which he wanted five or six pounds.

Mr. Street suggested that there should be a special subscription among the members for the purchase of the drawings to which the President had called attention, and said he was sure that as they were all Gothic architects nowadays, they would hail with pleasure the opportunity of securing such interesting illustrations. It ought, he thought, to be mentioned, in connexion with Carter, that he was a practical architect. He built the Roman Catholic church at Winchester, and restored the church at Sundridge, in Kent. With regard to the latter, he (Mr. Street), when charged with the superintendence of some subsequent repairs at the church, discovered some drawings on the wall, made by the hand of Carter, in reference to the works which he intended to carry out.

The President said he had informed the owner that the money value of the drawings was not equal to their interest. If it was proposed that the drawings should be purchased (which he hoped would be done), he was quite willing to assist Mr. Street with his contribution, but he suggested that the better plan would be to leave the matter in the hands of the council. The drawings were extremely curious and valuable, and he hoped they would find a place on the walls of the Institute.

Mr. Newton inquired whether the council had heard anything of a project for the lending of a portion of the Soane Museum to the Great International Exhibition. He fancied that lending the collection to the Exhibition meant really lending it to South Kensington. He had been informed by a gentleman, who had been a trustee of Sir John Soane's Museum, that the Bill now before Parliament, for authorizing the transfer from Lincoln's-inn-fields to Brompton, was encouraged by those who wished to remove the whole Soane Museum to South Kensington.

The President observed that he was one of the trustees of Sir John Soane's Museum, and that, as he understood the matter, the Commissioners of the International Exhibition wished to get a complete collection of the works of Hogarth, and that they considered the collection would not be perfect unless it contained the series called the "Rake's Progress." The trustees were requested to lend the pictures; but their reply was that they had not the power to part with a single pic-

ture. As, however, other galleries were labouring under a similar disability, it was suggested that it might be removed for the nonce, and it seemed that a Bill (of which, however, the trustees of the Sir John Soane Museum knew nothing) had been introduced, simply providing for the temporary transfer of the Hogarth pictures. The Bill to which Mr. Newton referred had not yet come down to the House of Commons; but he was sure the feeling of the trustees was not to allow the Museum to be shifted to South Kensington by a side wind, or by any other means. If he should be in the House of Commons when the Bill was introduced, he would venture, in his capacity of trustee, to state that their only object in lending the pictures was to promote a great national undertaking.

Mr. Newton said he had a copy of the Bill in his hand, and that it was drawn in such a manner as not to refer to the pictures alone.

The President.—Well, all I can say is, we only intend to let the pictures go for one distinct purpose. With regard to the paper which the Rev. Mr. Burgess has kindly promised to read this evening, I think it right to say that he has undertaken the duty at very short notice, and he has requested me to ask your indulgence on that account.

The Rev. Mr. Burgess then read a paper, entitled "On the Leonine City—Vatican."

This will be found elsewhere.

At the conclusion,

The President, in inviting discussion upon the interesting and erudite paper which Mr. Burgess had just read, observed that when at Rome he had often been struck by the singular mechanical accuracy of the Roman builders. The masons uniformly broke joint accurately, so that the whole stone or brick came over the joint below it. This was especially observed with regard to their brickwork; and he had never witnessed any ancient work of that kind in London, Paris, or Italy, where this peculiarity was not to be witnessed. Another peculiarity had struck him, which was the enormous thickness of the mortar-joint. In England, when the mortar-joint was too thick, it was thought that it made bad work; but the Romans did not think so, for the mortar-joint was often as thick as the bricks. In this country the bricks were good, and the mortar was also good, but the careless way in which the joints were put one over the other often spoiled the work. This was, no doubt, a common-place remark, but it was a practical one, which young architects would do well to regard, so that the infirmity of the joint might be met by the solidity of the brick or stone coming over the other. With regard to the sieges of the Leonine City to which Mr. Burgess had referred, it was singular that the two assaults which had been made upon it were made at about the same point. The soldiers seemed to have scaled the walls at the same side at which the great attack of Garabaldi was made three centuries afterwards. The atrocities which were committed during the first of these assaults were of the most dreadful description, and he had in his possession an account of them written by an eye witness, which entirely corroborated the account given by Benvenuto Cellini. The interesting account with which Mr. Burgess had favoured them that evening led him to hope that if any one were present who had visited Rome lately, he might wish to offer some remarks upon the present condition of the Leonine City.

Mr. Wyatt said he was sure they must all feel grateful to Mr. Burgess for his paper, with regard to which he (Mr. Wyatt) hoped he would not be considered as taking an ungracious exception if he ventured to say that the only charge which could be made against it was that it dwelt upon the casket and not sufficiently upon the jewels which it contained. Perhaps one of the chief causes of the protection of the Leonine City was to be ascribed to the Saxon pilgrims who inhabited the portion of it described by Mr. Burgess. The connexion of those pilgrims and their bishops with the court of Rome was interesting when associated with Saxon art. An interesting incident of this period was preserved in the great fresco of Raffaelle, which represented the whole front of the basilica, and the pope giving his blessing to the people, while at the same time the flames were suspended by the miracle which he wrought. All architects must, he was sure, feel interest in the basilica which preceeded that famous church, which is now the wonder of the world. Writers of the period, when the basilica was standing, left minute descriptions of the superb decorations with which it was embellished. They spoke of the value of the gold and silver which covered the shrines and of the candelabra which had been presented as votive offerings from great emperors. The taste for art which distinguished the Tuscan princes of that time, had led to the foundation of the museum, and of that wondrous collection of the masterpieces of art which the Vatican contained. It was, no doubt, much to be desired on political grounds, that the supreme Pontiff should be confined to his own legitimate limits as a spiritual prince. His holiness was a highly conservative sovereign, and preserved with perhaps too jealous care the treasures committed to his charge. No wonder, then, that the eyes of all who felt an interest in learning were fixed upon the unlocking of the treasures of the Vatican library, for it was the great source from which a new light was to break upon the history of art. He hoped that in any future distribution of the papal power which, he said, Mr. Burgess might make, he would see that the casket was unlocked more freely for the future. He begged to move a vote of thanks to the rev. gentleman for the admirable paper which he had read.

The President, in putting the vote of thanks, complimented Mr. Burgess upon the architectural and literary acquirements which he had brought to bear for the instruction and amusement of his hearers.

The Rev. R. Burgess expressed his acknowledgments, and suggested that Mr. Wyatt, who appeared so well qualified to treat the subject, would upon a future occasion give them a paper upon the treasures of the casket.

Mr. Bell (hon. sec.), announced that the paper to be read on the next night of meeting (the 28th April), would be on Jewish and Roman architecture in Palestine, from the earliest period to the time of the Crusades.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

ON March 26th, Mr. George Vere Irving, V.P., in the chair, Mr. George Maw, F.S.A. exhibited three articles found between fifty and sixty years since, upon pulling down an old house in Norwich, including a letter dated February, 1615, by Martin Calthorpe, communicating that "Colonel Cromwell was alive and well since the printed newes of his beinge slaine in a duell in Holland, which report was unfounded." Mr. T. Ingall exhibited a painting of the bust of the Saviour, in oil, on a thin plaque of alabaster. It is believed to be the work of a Spanish artist, of the close of the sixteenth century. Mr. Syer Cuming made some observations on paintings upon stone, and referred to various examples. Dr. Barlow enumerated several on slate, a very remarkable example of which is a series of figures of the Apostles, in the church of St. Ursula, at Cologne. Mr. Syer Cuming read a paper "On Ancient Fibulæ;" also a paper "On Seals bearing a date." Hitherto he had not met with any before the fourteenth century, and only one of that era; of which an impression was exhibited. It was the seal of Cottingham Priory, founded in A.D. 1322, by Thomas Wade, Lord of Lyddel. Mr. Paul Brisdon, of Douglas, Isle of Man, forwarded some memoranda relating to Thomas Burton, Bishop of Sodor and Man, whose seal formed the front of a large silver bracelet, lately exhibited to the Association; and the chairman laid upon the table Part II. of the "Collectanea Archæologica," which completes the first volume of this additional publication of the Association.

OXFORD ARCHITECTURAL SOCIETY.

THE first meeting of this society in Lent Term was held on the 11th ult.; Professor Goldwin Smith in the chair; when the president called upon Dr. Ermête Piérotti for his lecture upon "The General Topography of Jerusalem."

Dr. Piérotti regretted his inability to address the meeting in English. He described generally the several theories which had been put forward by Schultz, Barclay, Robinson, and others, as to the position and extent of the external wall described by Josephus, especially on the western and northern sides of the city. In passing along the line of the wall, he pointed out on his plan the south and western sides of the city, where he had discovered blocks of masonry in digging, and from which he gathered without doubt that the wall at a certain point diverged, taking a more westerly direction, instead of continuing due north, as is generally indicated in the maps of those who have as yet written on the topography of Jerusalem. In describing the north side, he drew the line of the wall across from east to west, much nearer to the southern side of the city than appeared on the plans of the writers mentioned. He requested Mr. George Williams to explain more fully in English the details of his discoveries.

Mr. Williams then explained at some length the views of Dr. Piérotti on the many controverted points in the topography of ancient Jerusalem. He laid much stress upon the importance of the gate Genath (*i.e.*, the gate of the Gardens), which occurred in the line of wall, and was not far from the site of the Holy Sepulchre, but which left it on the exterior of the city walls; so that there was great probability that the spot generally assigned to the Holy Sepulchre was the correct site.

The second meeting was held on the 18th ult., when various gentlemen were elected members of the society.

The President then called upon Dr. Piérotti for his lecture upon the "History of the Temple Enclosure."

Dr. Piérotti, as on the previous occasion, addressed the meeting in French. He said that, during the eight years he had laboured in Jerusalem, he had paid especial attention to that part which would form the subject of his lecture. He had examined several plans; but for wild imagination that of Mr. Fergusson stood foremost. It could only be accounted for by the fact,—and this he understood to be the case,—that Mr. Fergusson had never set foot in Jerusalem, and only gained his ideas from drawings or from the contradictory accounts of travellers. Thanks to the Pacha, and to his own position as engineer and architect to the Turkish Government, he had been able to work in this important spot, guarded by Moslem fanaticism, which had been generally hitherto forbidden ground for Europeans. He then briefly, as was the case with the first lecture, passed in review the main topics which he considered of interest, and especially dwelt on those points on which his discoveries threw any light.

Mr. Williams then interpreted more fully the views of Dr. Piérotti.

He divided his lecture into three parts. The first consisted of a rapid sketch of the history of Mount Moriah from the earliest period to our own time; recalling to memory the monuments erected thereon. He next proceeded to give a description of the outer wall forming the inclosure of the Haram Ech-Chereef. In the third part of the lecture he described the interior of the Haram Ech-Chereef. Dr. Piérotti's discoveries, he continued, left no room for doubt as to the "Place of Sacrifice," and the complicated series of underground drains of the time of Solomon were no doubt found necessary to clear away the blood and offal of the victims sacrificed.

Many other points of interest were introduced in the lecture. The *Oxford Journal*, to which we are indebted for these particulars, states that Dr. Piérotti intends shortly, by means of a volume of large illustrations and measured plans, with descriptive letter-press in French and English, to lay a full account of his excavations before the public.

THE ARCHITECTURAL INSTITUTE OF SCOTLAND.

PRIZES.

AT a meeting of the Architectural Institute of Scotland, held in Edinburgh, on the 27th of March, the names of the successful competitors for the Institute's prizes were announced, and the prizes were delivered. Mr. J. D. Peddie presided. The secretary having read the report of the Council of Management on the works sent in for competition; and the students having been addressed by Mr. Lessels, architect; Mr. Peddie distributed the prizes as follows:—1. For the best geometrical drawing, by apprentices of not more than three years' standing;—First, medal, Alexander Fraser, apprentice to Mr. John Lessels, architect, Edinburgh; second, book, Thomas M'Mahon, also apprentice to Mr. Lessels. The council also consider the drawings of Mr. George Frederick Stalker, apprentice to Messrs. Peddie & Kinnear, architects, Edinburgh; and James M. Monro, apprentice to Mr. John Henderson, architect, Edinburgh, to be deserving of commendation. 2. For the best perspective drawing;—First, medal, Edward F. C. Clarke, apprentice to Mr. David M'Gibbon, architect, Edinburgh. 3. For a series of drawings from old buildings, measured and drawn from the originals;—First, medal, Alexander C. Beattie, apprentice to Mr. David M'Gibbon; second, E. F. C. Clarke. The council also commend another series of drawings sent in by the last-mentioned competitor. 4. For the best original design,—subject, a church belfry in perspective,—the council have had great difficulty in determining the comparative merits of the designs

of two of the competitors under this head; and they have resolved to consider them of equal merit, and each deserving of the medal. The successful competitors are Alexander C. Beattie, above-mentioned, and Bruce J. Talbert, improver with Messrs. Campbell Douglas and J. J. Stevenson, architects, Glasgow. The execution of the drawing of Mr. Talbert, the council consider to be deserving of very special notice. Four subjects have been fixed for a similar competition next year.

GLASGOW ARCHÆOLOGICAL SOCIETY.

THIS society met on the 24th of March, Mr. J. T. Rochead, V.P., in the chair; when Mr. James Napier read a paper "On Partick in olden times;" containing curious and interesting information regarding that ancient village, which is now a suburb of Glasgow. Mr. John Baird brought before the meeting a letter from the Duke of Argyll, giving instructions regarding the destruction of the "Bonnie House o' Airlie;" from which it appears that the duke was not present on that occasion. Mr. Baird also made a brief communication regarding Hamilton of Bothwellhaugh, who shot the Regent.

THE SANITARY QUESTION.

NORTHERN ARCHITECTURAL ASSOCIATION.

AT the annual meeting of this society, held on Tuesday, the 25th inst., at the Old Castle, Newcastle-on-Tyne; Mr. John Dobson, the president, occupying the chair; a letter from the Birmingham Architectural Society stated that the society had considered the scale of charges sanctioned by the Northern Association; and inclosed a series of resolutions expressive of their opinion on the various items enbraced in the scale. It was further resolved, on the motion of Mr. Pritchett, of Darlington, that the consideration of the opinions expressed by the Birmingham Society do stand over for the present.

Mr. Austen read the third annual report, which spoke hopefully of the progress of the society.

Mr. F. R. Wilson read a paper on "the Sanitary Question," in the course of which he said,—"I would add a few more words on the primary importance of a salubrious site. In the case of cottages, particularly, we so often see the back-yard or back-garden, with the midden, privy, overflowing water-butt, and pig-stye, higher than the basement of the house. No art can prevent such places from being constantly damp; nor the persons who inhabit them from inhaling an imperceptible but pernicious vapour, drawn from the damp without by the heat within. The cottages of hinds are often built on slopes, below or against the cattle-sheds, and close to stagnant ponds. I lately inspected a row of cottages occupying this unenviable site. The back walls of the cottages formed the back walls of the cattle-sheds: close before the doors of the cottages stood the double pig-styes of the hinds; and at the end of the row was the green still pond. In this arrangement the cattle had the best of it; being on the ridge of the slope; the percolations from the sheds making their way to the lowest lying point,—the pond, beneath the flagging of the hinds' cots. Within the latter, the rafters were unceiled, but hidden with calico; and the imperfect thatching permitted the rain to trickle freely down the walls, and to drip heavily, in large tears, in different places, upon the floors. If, by any unfortunate chance, there is no choice of a better site than one in similar immediate contiguity to cattle-sheds, the soil should be covered with concrete before cottages are built upon it.

In model villages, too, I have seen great mistakes in the choice of sites. Landed proprietors, anxious to improve their cottage property, have obtained excellent designs from first-class men; but these have been placed in the hands of the surveyor to the estate for execution; and sanitary requirements in the matter of sites have been altogether overlooked. Where the old one-roomed thatched hovel stood, now stands the picturesque gable-fronted cottage; with, perhaps, rows of double daisies in the tiny fore garden; but there all improvement ends: the pig-stye is built against the back wall; the spouting is insufficient; and the soil in the rear is higher than the basement. I expect our esteemed member, Mr. Watson, who has turned his attention particularly to farm buildings, will agree with me that it is better to build on a ridge, bleak though it be, than to obtain a partial shelter from wind by building at the foot of a slope, on a site subject, by the laws of gravitation, to percolations from soil, sheds, byres, styes, or middens."

The meeting next proceeded to the election of office-bearers, which resulted as follows:—President, Mr. John Dobson; vice-president, Mr. Walker; hon. treasurer, Mr. Dunn; hon. secretary, Mr. Oliver; committee, Messrs. Austen, Howison, Kyle, J. Lamb, Moore, and Pritchett.

Mr. Pritchett moved, "That the association should appoint two delegates to attend the Alliance meeting, which it was proposed to hold in London towards the end of June."

Mr. Dunn seconded the motion, which was agreed to; Mr. Pritchett and Mr. Austen being appointed as delegates.

THE ALBERT MEMORIALS.

The National Memorial.—The amount now subscribed is 43,500*l.* At a meeting, on Wednesday last, at the Mansion House, a member of the working committee submitted a plan for enabling the great body of the people throughout the kingdom to subscribe. It met with approval, and will be further considered on Wednesday next.

Faversham.—The local committee here have resolved to recommend the erection of a sun-dial in the Recreation Ground as a memorial of the late Prince Consort.

Worcester.—At a common hall of the citizens, convened by the mayor, it has been resolved to aid the national memorial. The local *Chronicle* says, however, that many persons are of opinion that a local memorial ought also to be erected; but does not approve of the Infant Orphan Asylum proposed by Mr. Curtler; nor of a sanitarium, as also suggested; and urges the formation of an institution which will combine "a natural history room, school of art, hall for lectures and classes, with chemistry, botany, geology, &c., with a free library, and for the advancement of the social sciences generally;" the institution to be named "the Albert College."

Bristol.—The mayor has issued a circular stating that in compliance with the resolutions passed at the public meeting held in the Guildhall, on the 20th ult., it has been determined by the committee that the Bristol memorial to the late Prince Consort shall consist of a work of art of a monumental character, to be erected in the vicinity of the Victoria-rooms and the Fine Arts Academy. It is estimated that to erect a monument which shall be an adequate memorial of the late Prince, and worthily represent the wealth and population of the city of Bristol and its neighbourhood, the sum of 3,000*l.* will be required.

Devonport.—The suggestion of an Albert Museum for Devon and Cornwall, located at Devonport, as a memorial of the Prince, who, while in life, himself subscribed 50*l.* for such a museum, is supported by the Devonport *Independent*.

Wolverhampton.—Many influential persons here, says the local *Chronicle*, are in favour of the erection of a local monument to the Prince Consort, and some who have offered a certain amount towards a town fund for the central memorial have expressed their willingness to double it in aid of a local one: others have refused to subscribe at all, except to a local memorial. The paper named advises a bronze equestrian statue of the Prince, by Thornycroft.

Liverpool.—A meeting has been held in Liverpool, to inaugurate a movement for founding several Albert memorial scholarships at Cambridge. The meeting was a very influential one, and the resolution to found the scholarships was adopted, after some discussion as to the colleges where they should be established. It was finally agreed that they should be confined to Cambridge, and it was also agreed that they should be open to persons educated within a radius of seven miles of Liverpool. A sum of 3,000*l.* is looked for as requisite for the object in view. Of course, this new movement does not supersede the resolution of the authorities to erect a statue, already decided on.

Bradford.—A meeting (convened by the mayor) of the inhabitants of Bradford has been held in the Exchange Rooms, to consider and determine the best mode of testifying regard for the character and virtues of the late Prince Consort. The mayor presided. The meeting resolved that it is "desirable to erect, in this borough, in such form as may hereafter be determined upon, some lasting memorial to commemorate the distinguished virtues of the late Prince." Another resolution was passed to consider and report to a future meeting as to the best mode of carrying out the object. A sub-committee was afterwards appointed to convene another meeting.

Harrogate.—A subscription having been opened for the purpose of placing a stained glass window in Low Harrogate Church, as a memorial of his Royal Highness, a meeting of the subscribers has been held to inspect the designs prepared by Mr. J. W. Knowles, glass painter, York, and an order given to have the window completed. The east window is selected for the memorial, and is of three lancet lights. The centre compartment is to represent the "Ascension of our Lord," and underneath, the arms of the late much lamented Prince, and with a rich painted geometrical window on each side. The addition of a chancel to the church will, it is said, be shortly carried into execution, from plans prepared by and under the superintendence of Mr. R. Dyson, architect, Harrogate, so as to be ready by the time the artist has the window finished.

The Scottish National Memorial.—The *Scotsman* states that the acting central committee, appointed by the general meeting held on March 19th, have invited all the lords-lieutenant and conveners of counties, and provosts of burghs, who had not previously intimated their concurrence, to become members of the committee. A list of the committee as completed will be published. It has also been resolved to solicit the co-operation of Scottish regiments and of Scotchmen in the colonies in the erection of the national memorial; and a sub-committee has been appointed to carry out the practical measures of detail necessary to render the movement successful.

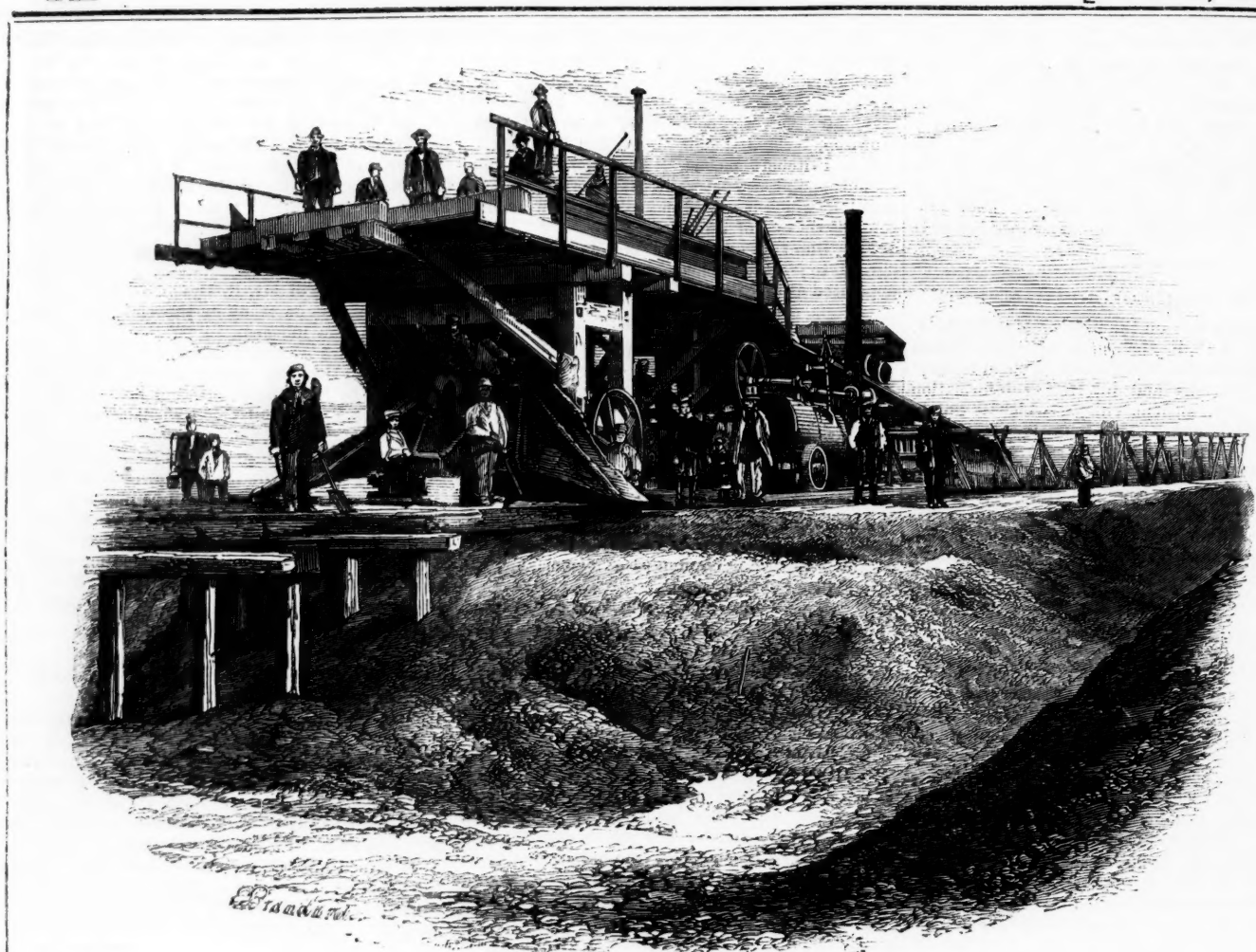
THE MEDIÆVAL COURT AT THE INTERNATIONAL EXHIBITION.

THE court for the exhibition of Mediæval art is on the north side of the nave, not far from the eastern dome, and promises to be a very attractive feature. It will be remembered that the Ecclesiological Society obtained space for such exhibition; and since then various other exhibitors, in the same walk, to whom space had been allotted, have joined with the Society, and given them the general control and arrangement. We could print a considerable list of modern monuments, screens, sculptures, metalwork, and furniture, which will be found there; but think it better to wait.

The National Committee for Architecture has also the control of a court for the exhibition of architectural art-manufactures, of all styles, situate in the east transept; and here, too, are the galleries of the special Architectural Exhibition, comprising drawings and models. A fine collection may be anticipated.

IMPROVEMENT IN LAUNDRIES: NEW DRYING-ROOM.

AN improvement in laundries has been brought under our notice which appears to be worthy of attention. It is patented under the name of "Huthnance's patent heating, purifying, and ventilating apparatus for drying-rooms, and improved laundry-stove and hotplate;" but the proprietor of the patent is Mr. William Pierce, of Jermyn-street. As described, "the drying-room is merely an ordinary room, with doors, windows, &c., that any one may enter; and every part of the room is heated equally, and thoroughly well ventilated; so much so, that beds and bedding can be dried upon the floor. The furnace-work forming this heating apparatus is placed inside the drying-room; and so arranged that it is perfectly accessible in the laundry or ironing-room; and forms an extensive hot-hearth ironing-stove, inclosed by sliding doors, which can be kept either shut or open, as most agreeable to the persons using it; and at the back of this hotplate and chamber are placed a series of pipes, heated from the furnace, and extending the entire length of the drying-closet. These pipes are protected by stone slabs, forming hot tables, upon which the linen can be laid, folded, and left at any time perfectly safe and free from any danger, as no fire whatever is accessible in the drying-room; all being protected by the stone tables." Thus the laundry and ironing-room are kept at a moderate temperature; but the system of ventilating the drying-room is considered the chief advantage, as the cold air is admitted through perforated panels placed in the lower part of the doors, and also through a perforated iron plate placed at the back of the stove, and opening direct into the drying-room, through which the air rushes in immense quantities; and, after it has produced its drying *and purifying* effects upon the linen, clothes, &c., it is carried off through the roof; where an opening is made for its escape and that of the steam, by means of a ventilator placed in the ceiling under a louvre close to the smoke-flue. The apparatus appears to be simple and cleanly, as well as wholesome; and to constitute a decided improvement on the usual laundry system.



TRAVELLING CONCRETE STAGE: MAIN DRAINAGE WORKS, LONDON.

TRAVELLING CONCRETE STAGE: MAIN DRAINAGE WORKS.

WE have pointed out that the exigencies of the Main Drainage works have called forth several novel contrivances. We present a view of a portion of the skeleton railway, with the movable stage upon it, which is made use of by the contractor, Mr. George Furness, for the purpose of casting down the concrete to form the embankment which conducts the parallel lines of sewers from the neighbourhood of the penstock chamber at Old Ford to the reservoir at Barking Creek. It will be borne in mind that from this point the district the sewers traverse is so low-lying that, although the level has a fall of two feet in a mile, it here becomes necessary to support the sewers at an elevation. This is done by means of an embankment of solid concrete, which is constructed in the manner shown in the engraving. As the surface of the land is irregular, piles of various heights are driven in till one regular height and level are attained. Upon this elevation sleepers are thrown across, from pile to pile, and rails placed upon them: upon these the waggons laden with concrete travel; and, where the ground has a sufficient fall, they simply tip over their contents from the line of rails. Where, however, the fall is not of the necessary depth to furnish the required shock to the concrete, additional height is gained by the travelling scaffold stage before us. The waggons are drawn up the inclined platform by the steam engine attached to the stage; and, when they have ascended to the summit of the scaffold, they are tipped up, and the concrete falls heavily among the piles. The grand feature in this contrivance is its movableness. As soon as sufficient concrete has been cast down, and one length of work is finished, the stage is propelled on to it, and a fresh length is commenced. The piles are, of course, left in the concrete; but the sleepers and rails will be taken up when their work is accomplished. It must be understood that this embankment is not in one continuous line. There are numerous irremovable obstructions in the way which call for the construction of aqueducts and for varied treatment;—amongst them four railways, seven small rivers—including the river Lea and the Channelsea river, the feeder of the East London Waterworks, a highway, a peatmoss, and several occupation roads. The embankment is, therefore, necessarily in different lengths. As the present level is to receive the inverts of the sewers in their bed of blue lias, the ultimate height of the work, when containing the perfected sewers, will be considerably greater.

HEMSTED HOUSE, NEAR STAPLEHURST, KENT.

ACCORDING to Hasted's History of Kent, Hemsted, in the reign of Henry III., belonged to Henry de Hemsted, who had assumed his surname from it, but his descendants did not continue long there for in the reign of Edward III. James de Echyngham, of Echyngham, in the county of Sussex, became possessed of it. In the next reign it belonged to Sir Robert Bilknof, Chief Justice of the Common Pleas, who being attainted in the eleventh year of that reign, the estate was forfeited to the crown, whence it was soon after granted to William de Guildeford, with whose descendants it remained until the year 1685, when it was sold to Sir John Norris, admiral of the fleet, who, in the year 1780, disposed of it to Thomas Henry Hodges, esq, who for some years represented the county in Parliament, and from whom it was bought by the present owner, Gathorne Hardy, esq., member for Leominster.

William de Guildeford is said to have made large additions to the house, of which, however, the only remains were some oak wainscot panels, and small portions of stonework, found in the office buildings of the house lately taken down, a comparatively modern structure, probably erected by Sir John Norris's descendants.

The new house represented by the engraving is built in the prevailing style of the time of James I., from the designs, and under the superintendence of Mr. David Brandon. The external walls are constructed of red bricks, made upon the property, and Box Ground stone; and the internal walls are principally constructed of local sandstone, brought from a distance of about two miles. The columns and arches of the arcade in the south front are of Portland stone; and the pavement is laid with Portland stone and tiles designed for the purpose and supplied by Messrs. Minton.

The dotted lines upon the plan (which we shall give in an early number) show the designs of the panelled ceilings, executed for the most part in plaster. The corridors and passages communicating with stone staircases are constructed fireproof, upon Messrs. Fox & Barrett's principle; and the floors of some of the rooms, and of the central staircase, are laid with parquetry supplied by Messrs. Arrowsmith, of Bond-street. The contract for the house was taken by Messrs. J. & C. I'Anson, who have also erected the stables and farm-buildings, as well as the gas-works. The engineering portion of the latter was executed by Messrs. Stevens & Son, of Southwark. The new approaches to the house, and the designs for the gardens, are being carried out under the direction of Mr. W. B. Thomas.

THE PRIORY CRYPT OF ST. JOHN'S CHURCH, CLERKENWELL.

AMONG the numerous ancient crypts which you have from time to time engraved and described in the *Builder* is that belonging to the ancient Priory of St. John, Clerkenwell; and, on January 23rd, 1860, an order in Council was made relating to the coffins contained therein, viz.;—"That the coffins contained in the public vaults be *laid down on the floor*, and covered with powdered charcoal and fresh earth." You will regret to learn that during the past week the coffins, instead of being laid on the floor, have been piled up from the floor to the ceiling or arch in the aisles of the crypt, and the doorways bricked up. In this manner the Early English trefoil-headed doorway, engraved in the *Builder*, vol. xii., p. 519, has been obliterated. The crypt has been thus shorn of its proportions, and almost reduced to a central avenue; which might have been avoided if the coffins had been laid on the floor, as directed by the order in council. The importance of placing these ancient crypts on record has been thus rendered evident; and I trust that, as far as possible, the interesting crypts remaining in London and elsewhere may be protected from a similar spoliation. The Cock-lane Ghost was discovered in the crypt: her remains were turned quite black, and have been placed in the north aisle, and bricked up with the rest of the coffins.—W. P. GRIFFITH.

HEMSTED HOUSE, NEAR STAPLEHURST.—MR. DAVID BRANDON, ARCHITECT.

SOUTH KENSINGTON AND THE GROTESQUE.

I AM sorry that your correspondent, "A. W." should appeal to so humble a person as myself for a sketch of the grotesque. The right person to apply to for information on that as well as other points, connected with the art and art inspiration proceeding from South Kensington, would be the Inspector-General for Art, Mr. Redgrave, who, by his report on the Exhibition of 1851, as well as by many valuable services to his country in art matters generally, has attained to the position of the highest art critic in England, in every phase and subject of art-workmanship. But as, unfortunately, Mr. Redgrave seldom either speaks publicly or lectures on such matters, and as I feel little disposed to allow a sneer at the place of my education, and at schools of design generally, to pass unnoticed, especially when I am personally referred to, I shall ask your permission to say a few words on the subject.

I concur heartily with your correspondent in his admiration for early work and modern Pre-Raffaellism in a state of sanity. It is a question with me whether anything built after the beginning of the fourteenth century is worth the trouble of preserving, but no question at all as to the position of Hunt and some few other men in the ranks of England's artists. Agreeing so far with "A. W.," it is not without some feeling of regret that it devolves on me to set him right once more on a point in connexion with our system of instruction in schools of design, or more properly schools of art, which, if he understood, would prevent these continual side-hits at the schools.

The grotesque is the embodiment of intense knowledge, exhibited sometimes under a humorous, and at other times under a terrible aspect. Used as a vehicle to convey ideas, or illustrate theories which the dignity of the highest art could not well stoop to handle, it yet requires for a successful treatment all the knowledge and all the experience which is necessary for success in the most elevated walks of art. To this must be added a keen sense of the ludicrous and the terrible, with the intellectual power to grasp the precisely grotesque features, the knowledge where to draw the line between the pure grotesque, and the merely distorted, with the technical manipulative skill required in the first order of works. It must have knowledge to distinguish what is apparently dissimilar but actually like, and the reverse; knowledge to discover the highest types and most perfect embodiments of physical faculties, and the highest mental developments; intellectual power to conceive the extraordinary, the possible and impossible, and to handle them in appealing to the imagination, so as to convey perfectly the image, idea, or theory which is illustrated; manipulative power and skill of the most consummate order, that a complex idea may suffer nothing in its expression.

Now if this is a fair description of true grotesque—and, at any rate, this is my own idea of it—it will be obvious that those only are capable of treating the grotesque who are capable also of almost everything else in art. And this, I maintain, is the difference between the grotesque and the caricature,—that whereas the latter may be the product of average minds, and having but a superficial meaning, the former requires the highest capacities, the greatest experience, the most perfect knowledge; and its significance should partake of the profound. It is infinitely the most difficult phase of art to handle truly, on account of these requirements, for nothing is more contemptible than tame, namby-pamby attempts at the grotesque. I question whether there are at present a dozen sculptors in London, or England, who could produce a specimen of the true grotesque. There may be a few painters, and they are very few.

I will ask, then, what have schools of art to do with the grotesque? A student comes to us unable to draw a stroke; attends two or three evenings a week for an average period of a year. In this time he will acquire a sound knowledge of the construction of plane geometrical figures, and learn to draw fairly from a copy of ornaments. When he stays longer, he requires to learn some practical drawing, which will help him on in his trade or business: if a mechanic, mechanical drawing; if an architectural pupil, construction, and plan and elevation drawing, with a little modelling; if a decorator, the coloured ornament of the historic styles; if a lithographer, chalk shading and drawing from nature.

Now this is precisely what Schools of Art were instituted for; and in performing this public duty successfully they assert their claim to public support, as having a general influence on the well-being of trade and manufactures. It is on these grounds their claim is acknowledged; and it is by these humble means that a vast and mighty agency is at work in England, repaying manifold the public money spent in the support of the schools.

Our raw material is very raw; our manufactured article must be a tolerably perfect machine, according to the time devoted to the process of manufacture. Our material is coarse; our means are humble; our opportunity short; our aims and object are therefore necessarily low. But what we do we endeavour to do well, to let it be sound and perfect as far as it goes. We neither attempt to draw with a piece of chalk at the end of a stick, nor endeavour to draw griffins and alligators before we can look a sucking dove in the face without blinking.

Your correspondent must not, therefore, go to South Kensington to look for the grotesque. If he go, and the oftener he goes the better, let him be content with the educational, and let him also acknowledge in it much of the true and the beautiful, for both are there. The national medallion works will be shortly exhibited at the Museum. There is therefore a good opportunity, for in these works the schools are on their best behaviour.

I suppose I was appealed to for a pencil sketch, to be engraved as an illustration for the *Builder*. I cannot find time just now to make an original one, even if I had the ability, and am not near enough to one of those grand old cathedrals, which your correspondent and myself equally admire, to go and make a sketch from some of the many examples which I could easily find in most of them. Yet the request shall be remembered, and at some future day be complied with. But instead of this at present I will give your correspondent a pen-and-ink sketch of the true grotesque, perhaps as perfect as an engraving.

When a man apparently studies a subject without a definite purpose, and evidently without system, and with scraps of information thus obtained periodically assails that which is beyond his comprehension, using the talents God has given him for a destructive instead of a creative purpose; when he cannot distinguish between educational means and the educational end, and persists in crying aloud for an effect, and ignoring the cause; when he ejaculates the result of his studies publicly in the form of short missives, innocent of a beginning, and guiltless of an end, in which it is both difficult to discover a reason for their appearance, and impossible to find any reasoning in them when appeared; when he cannot worship at his own shrine without bedaubing and bemiring the devotees of other small gods in his immediate neighbourhood; then I hold that he is in his own proper self, a very admirable example of the true grotesque; and I hope your correspondent will both acknowledge and recognize the truth of the portrait.

WALTER SMITH,
Head Master, Leeds School of Art.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of members was held on Friday (the 28th ult.) at the house in Conduit-street.

The President (Mr. Blomfield) occupied the chair.

Mr. Francis Sills was on ballot elected a member of the Association.

Mr. F. A. Skidmore then read a portion of a paper "On Metal Work," which he illustrated with diagrams, without the aid of which the essay would scarcely be intelligible.

There being no time for discussion, the further consideration of the subject was adjourned until a future evening.

ON THE SEWERING OF TOWNS AND DRAINAGE OF HOUSES.*

WORKSOP.

General Description of Works.

THE outlet works consist of six trenches about 200 feet long, 3 feet deep, and 18 inches wide at the bottom, with side slopes of one to one. These trenches are provided with sluice-arrangements at each end, to allow of the sewage being diverted as may be required, either for cleansing the trenches or for other purposes.

At the termination of the outlet-sewer provision has been made for passing limewater, or other disinfecting fluid, into the sewage; and movable screens, for intercepting solid matter, have been placed in the trenches. Two outlets for filtered sewage-water are provided into the river Ryton. The area sewered is about 400 statute acres.

The sewer from Bridge-street to opposite Beaver-place is of brick, egg-shaped, 2 feet 3 inches by 1 foot 6 inches. At the termination of the brick sewer an overflow into the river Ryton is provided; and from this point to the outlet works the sewer is formed of 15-inch earthenware pipes; cast-iron pipes of the same diameter being laid across the river and mill-stream. The outlet sewer has a fall 1 in 600. This outlet serves for the entire district. The sewers are formed principally of stoneware pipes of 15, 12, and 9 inches diameter. The manholes and lampholes are furnished with movable covers to admit of the sewers being examined. The ventilating-shafts are fitted with charcoal-filters, through which the sewer gases are passed and thereby oxidised. Seventy-five manholes, 48 lampholes, and 51 ventilating shafts are provided on the sewers.

* By Mr. Rawlinson, C.E. See p. 222, *ante*.

WORKSOP MAIN SEWERAGE WORKS.

PARTICULARS OF COST.

Description of Works.	Quantities.		Average Cost per Yard.	Cost.	Amount.
Brick Sewers—	Cub. yds.	Cub. yds	£. s. d.	£. s. d.	£. s. d.
2 ft. 0 in. diameter, 9 in. thick	64	..	0 19 9½	63 5 3	
2 ft. 3 in. by 1 ft. 6 in. 4½ in „	950	..	0 13 8	648 17 1	
Total Brick Sewers	..	1014	..	..	712 2 4
Earthenware Pipe Sewers—					
15 inches diameter	3695	..	0 5 3	970 0 4	
12 inches do.	4084	..	0 4 6½	939 14 0	
9 inches do.	3537	..	0 3 2	560 2 3	
Total Earthernware Pipe Sewers	..	11316	..	..	2469 16 7
Cast-iron Pipe Sewers, for crossing canals and rivers, including cost of retaining walls, puddle, pitching, &c.					
15 inches diameter	69	..	2 13 5½	184 7 8	
12 inches do.	18	..	3 5 2	58 13 0	
9 inches do.	12	..	1 13 0	19 16 0	
Total Cast-iron Pipes	..	99	..	..	262 16 8
Total Length of Sewers	..	12429 or 7 miles 109 y.			
	Number.		Each.		
Manholes	75	..	6 15 6	508 2 9	
Lampholes	48	..	2 1 0½	98 9 9	
Gullies, with drains complete	136	..	2 1 11½	285 3 8	
Three Flushing Chambers and three Overflows	6	..	4 13 8½	28 2 3	
Ventilating Shafts	51	..	1 16 6½	93 4 3	
					1013 2 8
Outlet Works complete				..	257 1 4
Timber and Concrete in trenches				57 15 4	
Disc Plugs and fixing				7 17 0	
Making connections with old Sewers, &c.				18 3 11	
Assistance in levelling, and sundry expenses				13 12 10	
					97 9 1
Land and Compensation				..	331 19 6
Rent of Pipe-yards and sundry expenses				..	3 16 4
Advertising and Stationery, &c.				..	28 13 9
Law expenses				..	20 19 9
R. Rawlinson, Engineer				394 3 0	
W. McLansborough, Resident Engineer—Salary, office rent, and expenses				279 18 7	
					674 1 7
Total cost					5871 19 7

N.B. Earthenware pipes, 15 inches in diameter, were delivered at Worksop at 11d. per lineal foot; 2s. 9d. per yard.

Manholes throughout the entire sytem are provided with grooves for flushing sluices; and, in addition to these arrangements, flushing-tanks have been constructed at the upper ends of the sewers. Connections, for flushing purposes, have also been made with the open drain or watercourse in Chesterfield-road, and with the canal near East-gate.

136 gullies (including five for storm waters) are fixed within the district. The gullies are double-trapped, and are so constructed as to prevent road-dirt and solid substances passing into the sewers. Two overflows for storm waters have been provided near Beaver-place, and one for Low Town main.

Sewers are laid under the Chesterfield canal at two points, and over and under the river Ryton, and the canal feeder at seven points. In all cases the crossings have been made with cast-iron pipes of 15, 12, or 9 inches diameter.

The site on which Worksop is built presents several natural and artificial difficulties to cheap sewerage works. The valley is flat and liable to rain-floods: the river had to be crossed several times; as also the canal on one side, and the canal feeder on the other. The outlet works are simple in plan and economical in cost. Expensive tanks have been avoided; and the cheapest, but most effectual, means for intercepting and removing any solid, flocculent, or discolouring matter have been adopted. The experience of two summers has shown that these works are efficient.

The proper place for liquid sewage, however, is the land; and the best filter is vegetable soil under full cultivation; but when the sewage is so used at Worksop, the existing outlet works will be necessary, as it is advisable to intercept any floating solids and to irrigate with the fluid above.

The entire of the sewage of Worksop may be carried on and over the land below the outlet works very cheaply, by contour conduits, and be distributed by surface irrigation. A small outlay on such works, and intelligent management in irrigating and growing appropriate grasses, will prove beneficial to the farmer.

The entire system of sewers in Worksop is fully ventilated by special arrangements for this purpose at fifty-one places, and these include all upper ends of sewers. The estimated cost of the works was 6,000*l.*: the actual cost, including all contingencies, was 5,871*l.*

BUXTON.

Sewerage Works.—Particulars of Cost.

Earthenware Pipes.	Quantity.	Aver. Cost.	Amount.
	Lineal yards.	£ s. d.	£ s. d.
15 inches diameter	1590	0 8 3	657 11 9
12 inches do.	2522	0 6 0	756 19 2
9 inches do.	2151	0 4 6	483 10 8
Total Length of Sewers	6263		
	No.		
Manholes	45	11 11 0	520 17 4
Lampholes	35	5 11 0	196 1 9
Gullies	20	3 2 0	62 0 0
Cast-iron Pipes for crossing river outlet works and sundry works in connection with sewers—Compensation, &c..	—	—	46 1 2
Engineering & Superintendence	—	—	384 5 0
			3107 6 10

Outlets.

Two outlets for sewage have been formed into the river Wye; one near Wye-bridge, and the other opposite Duke's-drive. The outlet sewers are so arranged with regard to levels as to allow of the whole of the sewage being applied, by gravitation, in irrigating the land in the valley of the Wye.

Sewers, &c.

The district for sewerage purposes has been divided into two "drainage areas," the main sewer for each sub-district being formed of 15-inch stoneware pipes.

In many portions of the town the sewer excavations were made, wholly or partially, in limestone rock, In such cases the trenches were excavated 6 inches below the proposed level of the sewer, and a properly prepared bed was formed for the pipes by filling in the trench with clay, gravel, or sifted earth. Manholes and lampholes have been provided at all the changes of direction or alteration in gradient of the sewers. Flushing chambers have been constructed at the upper ends of the sewers; and provision has also been made for flushing from the baths and from the river.

The sewers from "High Buxton" have gradients of about 1 in 10. Overflows into the river Wye, for relieving the sewers during heavy rains, have been formed at river crossings and other suitable points. Ample means have been provided for ventilating the sewers by about thirty shafts furnished with charcoal filters.

My estimate for the public sewerage works of the district was 3,203*l.* The actual cost of the works as carried out was 3,107*l.* 6*s.* 10*d.*

WIGAN.

Mr. John Law Hunter, borough surveyor, has given me the following information as to drainage in Wigan:—

The average cost of draining cottages of about

3*l.* or 4*l.* rental has been at an average of....	£1	1 0
Ditto ditto 7*l.* or 8*l.* rental..	1	11 0
Ditto ditto 14*l.* or 15*l.* rental..	1	13 6

4,228 houses have been drained at a total cost of 8,796*l.* 19*s.* 10*d.*, or an average cost, per house, of 2*l.* 1*s.* 4*d.*

In draining 4,228 houses, 36,960 lineal yards of earthenware pipes have been used, being an average of 8¾ yards per house. The earthenware pipes used are from 9 inches to 4 inches internal diameter.

Many of the drains have been in use several years, and there have not been any complaints of choking or stoppages.

Water-closets are not in general use in Wigan, but cess-pits, yards, stables, and house sinks are drained. A general use of earthenware-pipe drains prevents rats living in the sewers and drains. They have neither food nor means of shelter.

DISTRICT OF WEST HAM, ESSEX.

Public Sewerage Works.

The parish of West Ham consists of the sub-districts of Stratford, West Ham, and Plaistow, and comprises an area of about 4,735 statute acres.

Population about 35,000, but is rapidly increasing. Annual rateable value, 135,000*l.* The entire area is low and flat. The lowest surface area is near Hallsville, and is about 4 feet above Ordnance datum.

The highest surface area is near Forest-gate, and is about 45 feet above Ordnance datum. The difference of level within the parish is, therefore, about 41 feet.

A considerable portion of the parish is marsh, protected, by artificial embankments, from tidal waters and land floods, which rise to a height of from 6 to 10 feet above the surface of the land.

This marsh land is intersected by ditches, and is under the jurisdiction of the Havering and Dagenham Commissioners of Sewers.

The distance from the outlet works to the end of the sewer near Forest-gate is about 3¼ miles; at Bow-bridge 2½ miles; in Romford-road, 2¾ miles; in Barking-road, 1¾ mile; and in the Lilliput-road, Victoria Docks, 1½ mile.

The outlet works consist of a pumping establishment and a low-water or relieving flood-water sewer.

The pumping establishment is erected on land purchased by the local board at Canning-town, and consists of an engine-house, boiler-house, coal-store, workshop, and engine-chimney, with pumping-wells, outlet-wells, and outlet-pipes.

Two condensing engines (of 40-horse power each), having 34-inch cylinders and 6-feet stroke, have been provided and fixed. Each engine works two pumps of 48 inches diameter, and 3-feet stroke. The two engines are capable of lifting 30,000,000 gallons* in 24 hours. The pumps are so arranged as only to lift to the level of the water in the river. The lowest lift is 8 feet: the highest lift is 22 feet.

The inlet and outlet pipes, to and from each set of pumps, are 30 inches diameter, having screw-down valves complete. Self-closing flap-valves are fixed on the outlet-pipes at the river-wall.

A low-water or relieving flood-water outlet has been formed at Bow-creek, near Barking-road station. The river Lea at this point is nearly 4 feet lower at low water of spring tides than the bed of the river opposite the pumping-works. This outlet, which is self-acting, discharges the flood-water for several hours each day without pumping. In the outlet-well adjoining the river, two self-closing flap-valves, similar to those at the pumping-outlet, have been fixed; and as a precautionary measure, one screw-down sluice has been placed in the manhole in Barking-road.

* 30,000,000 gallons, equal to 300,000,000 lb., or 133,928 tons.

The larger main sewers are formed of brickwork: smaller sewers are of stoneware pipes. Cast-iron pipes have been used for crossing navigable rivers, and also for crossing marsh drains, and for the main outlets. Brick sewers are "egg-shaped" on section, and vary in size from 5 feet 3 inches by 3 feet 6 inches, to 2 feet by 1 foot 4 inches. The whole of the brickwork is set in the best blue lias hydraulic mortar. Stoneware pipes are circular on section, and have half-socket joints. Cast-iron pipes are circular on section, and are formed with flange or socket joints. 24,227 lineal yards of brick sewers, 27,698 yards of stoneware pipe sewers, and 210 yards of cast-iron pipes, making a total of 52,135 lineal yards, or 29 miles 1,095 yards, have been constructed and laid within the district.

The sewers throughout the district have been designed with a view of obtaining the best practicable gradients, more especially for tributaries. In some cases, however, it has been necessary to lay the mains with a fall of not more than one in 3,520, or 18 inches per mile.

The sewers on plan have been laid in straight lines; and on section, with regular gradients. At each change in direction, or alteration of gradient, a manhole or lamp-hole has been constructed, affording means for inspecting and, when necessary, also for cleansing the sewers.

The main outlet sewers in Canning-town have been laid level, and the inverts are formed of cast-iron, to allow of their being laid and formed under water.

Considerable difficulties were experienced in the construction of the sewers in some portions of the district; arising from loose, wet, spongy, and other unfavourable descriptions of subsoil, and from other causes. Upwards of three miles of main sewers have been laid with cast-iron inverts, at or near the level of low water of spring tides, at the Barking-road outlet.

About 9,000 junctions for branch-sewers and house-drains have been provided on the main and tributary sewers. A careful account has been kept of these junctions, and has been placed in the hands of the surveyor to the board.

The main-sewer crossings, under three branches of the river Lea, consist of cast-iron pipes of 2 feet 6 inches, and 2 feet diameter. At each end of these cast-iron pipes under the rivers, a manhole is constructed with screw-down sluices, which may be put down in case of injury to the pipes under the rivers, and thus prevent flooding in the low districts.

The river-crossings were executed by Mr. Munday in a manner perfectly satisfactory to myself, and highly creditable to the contractor. By staging over the rivers, jointing the pipes, dredging the lines of mains, and lowering each entire length of pipe to its position, stoppage of traffic was rendered unnecessary, and claims for compensation, which might otherwise have arisen, were, by these arrangements, prevented.

Main and branch sewers have been constructed under the North Woolwich, the Barking and Tilbury, and Eastern Counties Railways, in eight separate places. The railway companies and their engineers afforded every facility for executing the works, and the crossings were completed without accident or stoppage of traffic.

On the sewers, as executed, there are 468 manholes, or means of access from the surface to the sewers for examination, for flushing, and, when requisite, for cleansing; and 197 lampholes for means of inspection, making, on an average of the entire length, one opening to the sewers from the surface of street or road, at about each 78 lineal yards. Manholes have step-irons, flushing-grooves, and movable iron covers complete. Lampholes have movable iron covers. There are 251 ventilating shafts provided on the sewers. These shafts are so arranged as to prevent road-drift falling into the sewers and impeding the flow. Sewer-gases are passed through wire baskets containing charcoal, and by this means are rendered innoxious. 718 gullies have been fixed within the districts. The gullies are so constructed as to prevent solid or other improper substances passing into the sewers.

Flushing arrangements are of three classes:—First, by the admission of water into the sewers through sluices, hose-pipes, or valves; second, by screwing down fixed sluices built in certain manholes, allowing the sewage water to accumulate, and suddenly raising the sluice; and, third, by inserting loose paddles in the grooves provided in nearly all the manholes. Thirteen flushing-valves and forty-two flushing-sluices are fixed in the sewers. By one or other of these arrangements, the whole of the sewers within the district may be flushed. About 310 feet in length of river wall has been put in, bounding the land belonging to the local board. This wall is constructed of brick and concrete, coped with stone, and is sound, firm, and calculated to be enduring. A wharf has been formed, at which coals for the engines are landed, but there is space for other traffic.

STATEMENT

SHOWING THE POPULATION, NUMBER OF HOUSES, LENGTH OF SEWERS, NUMBER OF MANHOLES, LAMPHOLES, AND GULLIES, AND THE TOTAL COST OF THE PUBLIC SEWERAGE WORKS IN THE SEVERAL TOWNS NAMED; TOGETHER WITH THE AMOUNT, AND RATE IN THE £ REQUIRED PER ANNUM TO REPAY THE PRINCIPAL AND INTEREST IN THIRTY YEARS.

Works Devised and Completed by Robert Rawlinson, Civil Engineer.

TOWN.	Population.	Number of Houses.	Total length of Sewers.	Number of Manholes.	Number of Lampholes.	Number of Gullies.	TOTAL COST OF WORKS. Amount.	Per House.	Per Head.	AMOUNT PER ANNUM TO REPAY PRINCIPAL AND INTEREST IN THIRTY YEARS. Total.	Per House.	Per Head.	Rate in the £ per ann.
			Yards.				£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Alnwick	7,016	947	11,132	54	28	140	4,327 18 10	4 11 4	0 12 4	250 5 10	0 5 3	0 0 8½	0 0 5
Berwick	10,067	1,451	7,995	40	51	128	5,649 1 4	3 17 10	0 11 3	326 14 0	0 4 5½	0 0 7¾	0 0 3½
Carlisle	26,310	4,113	24,079	131	99	366	23,310 6 7	5 13 4	0 17 8	1,348 2 3	0 6 6½	0 1 0¼	0 0 6
Chorley	12,684	2,337	13,205	79	47	282	10,546 4 7	4 10 3	0 16 8	609 19 8	0 5 2¾	0 0 11½	0 0 6
Lancaster	14,604	2,698	12,820	126	118	288	9,245 5 7	3 8 6	0 12 8	534 13 9	0 3 11½	0 0 8¾	0 0 4½
Morpeth.....	4,096	580	7,171	22	—	82	2,720 0 9	4 13 9	0 13 3	157 6 2	0 5 3½	0 0 9	0 0 6
Ormskirk	5,548	942	6,839	28	—	72	2,982 8 7	3 3 4	0 10 9	172 9 8	0 3 7½	0 0 7¼	0 0 4
Penrith	6,668	1,344	7,152	15	99	48	3,109 0 0	2 2 11	0 9 4	179 16 1	0 2 5½	0 0 6½	0 0 3
Tynemouth	29,170	4,478	17,871	122	154	559	12,404 18 5	2 15 4	0 8 6	717 8 5	0 3 2	0 0 6	0 0 5
Worksop	7,020	1,567	12,429	81	48	136	5,871 19 7	3 14 11	0 16 9	339 12 0	0 4 4	0 0 11½	0 0 6
TOTALS	123,183	20,457	120,693	698	644	2,101	80,168 3 3	—	—	4,636 7 10			
AVERAGES.....	—	—	—	—	—	—	—	3 18 4½	0 13 0	—	0 4 6½ Nearly.	0 0 9 Nearly.	0 0 5 Nearly.

Average Length of Main Sewer per House = 5·9 yards.

N.B.—Population to Houses about six to one; Private Works, such as house drains, yard sinks, soil-pans, &c., cost about equal rates to the above; that is, it is found from experience that the cost of private works of drainage, and of Water Supply Fittings, is about equal to the cost of Public Works of Sewerage and Water Supply.

WEST HAM.—PARTICULARS OF COST.

			Amount.	Total.
BRICK SEWERS.				
Ft. In. Ft. In.	Yds.	Yds.	£ s. d.	£ s. d.
5 3 by 3 6	1,117	..	3,901 6 10	
4 6 „ 3 0	2,562	..	7,476 4 0	
3 9 „ 2 6	1,463	..	4,085 9 3	
3 0 „ 2 0	7,588	..	12,376 7 11	
2 6 „ 1 8	3,182	..	5,566 7 7	
2 3 „ 1 6	8,231	..	9,156 17 11	
2 0 „ 1 4	84	..	59 15 6	
Total Brick Sewers	..	24,227	.....	42,622 9 0
EARTHENWARE PIPE SEWERS.				
15 inches diameter	10,646	..	6,671 14 11	
12 „ „	16,564	..	7,061 2 10	
9 „ „	488	..	142 12 7	
Total earthenware pipe sewers	..	27,698	.....	13,875 10 4
Cast-iron pipes for river crossings, &c.	..	210		
Total length of sewers (or 29 miles 1,095 yards)	..	52,135		
	No.	No.		
Manholes and ventilating shafts	232	..	3,455 5 4	
Manholes	236	..	3,160 4 3	
Lampholes and ventilating shafts	15	..	97 8 3	
Lampholes	182	..	1,008 9 8	
		665	.....	7,721 7 6
Gullies and pipes, fixed complete	..	718	.....	3,185 14 5
Outlet works, pipes, valves, &c			.....	1,754 14 5
River wall, wharf, and roads, at engine-house, and repairing roads			.....	2,677 9 2
Engine-house, boiler-house, chimney, and other works in connection therewith			.....	5,098 6 10
River crossings			.....	1,644 6 7
Engines, boilers, and pumps			.....	3,978 9 10
COST OF WORKS.				82,558 8 1
Engineering and superintendence			6,161 9 8	
Land and compensation, and law charges			2,999 8 8	
Coals and tallow, &c., for engines			303 5 3	
				9,464 3 7
Total cost				£92,022 11 8

N.B.—This amount includes purchase of implements, tools, and materials in the hands of the Local Board.

ALNWICK.—FIRST-CLASS HOUSE.—RENTAL £40 PER ANNUM.

WATER SUPPLY.	Price not Fixed.	Price Fixed.	Total Cost Fixed.
	s. d.	s. d.	£ s. d.
143 lineal feet of 1-inch galvanized tube	0 7½	0 10½	6 5 1
56 „ ¾ „	0 5½	0 8½	2 4 8
34 „ ½ „	0 4½	0 7½	1 1 3
16 in. of lead pipe for water-closet pan	0 10	..	0 0 10
3 in. of india-rubber tubing for ditto	1 1	..	0 1 1
1 ¾-in. self-closing ferrule cock for ditto	7 4	..	0 7 4
1 1-in. elbow ferrule with union joint	3 10	..	0 3 10
1 1-in. elbow piece	1 6½	..	0 1 6½
2 ¾-in. „	1 0	..	0 2 0
5 ⅝-in. „	0 7½	..	0 3 1½
1 1-in. socket-piece	1 1	..	0 1 1
2 ¾-in. „	0 8	..	0 1 4
2 ½-in. „	0 6	..	0 1 0
1 1 to ¾-in. taper-piece	1 1	..	0 1 1
1 1-in. T-piece	1 7	..	0 1 7
2 1 to ½-in. T-pieces	1 7	..	0 3 2
1 1-in. stop-cock	7 11	0 6	0 8 5
1 stop-cock case	4 6	1 6	0 6 0
1 1-in. screw plug, 9d.; 1 ½-in. do., 4½d.	1 1½	..	0 1 1
1 ½-in bib tap	2 10	0 6	0 3 4½
			11 18 11½
SEWERAGE.			
211 lineal feet of 6-in. earthenware pipe	0 5½	Price varies according to depth.	
68 „ 4-in. „	0 4		
6 „ 6 to 4-in. junction-pipe	1 6		12 0 9
3 „ 6 to 6-in. „	1 6		
1 „ 6 to 4-in. taper-pipe	1 4		
2 „ 6-in. bend-pipe	1 6		
1 water-closet pan and fan, old seat refixed	8 6	17 0	0 17 0
3 earthenware yard sinks	6 0	9 6	1 8 6
2 6-in. bell traps	2 6	8 6	0 17 0
Sewerage	..	..	15 3 3
Water	..	..	11 18 11½
Total	..	..	27 2 2½

SECOND-CLASS HOUSE.—RENTAL £15 PER ANNUM.

WATER SUPPLY.	Price not Fixed.	Price for Fixing.	Total Cost Fixed.
	s. d.	s. d.	£ s. d.
6 lineal feet of ½-in. galvanised tube	0 4½	0 3	0 3 9
72 „ ¾-in. „	0 5½	0 3	2 9 6
16-in. lead pipe for water closet pan	0 10	..	0 0 10
3-in. india-rubber tubing for ditto	1 1	..	0 1 1
1 ¾-in. self-closing ferrule cock for ditto	7 4	..	0 7 4
1 ¾-in. elbow ferrule, with union joint	2 3½	..	0 2 3½
3 ¾-in. elbow pieces	1 0	..	0 3 0
2 ½-in. „	0 7½	..	0 1 3
7 ¾-in. socket pieces	0 8	..	0 4 8
3 ½-in. „	0 6	..	0 1 6
1 ¾ to ½-in. T-piece	1 2	..	0 1 2
1 ½-in. bib tap	3 4	0 6	0 3 10
1 ¾-in. stop-cock	5 2	0 6	0 5 8
1 stop-cock case	4 6	1 6	0 6 0
			4 11 10½
SEWERAGE.			
47 lineal feet of 6-in. earthenware pipe	0 5½	Price varies according to depth.	
12 „ 4-in. „	0 4		
7 „ 6 to 6-in. junction pipes	1 6		
2 „ 6-in. bend pipe	1 6		4 0 1
1 „ 4-in. bend pipe	1 0		
5 „ 4 to 6-in. taper pipe	1 4		
3 earthenware sinks	6 0	3 6	1 8 6
2 6-in. bell traps, with earthenware dishes	2 6	5 0	0 10 0
1 water-closet pan and fan, with new seat	8 6	14 0	1 2 6
1 ash-pit, filled up and repaved	5 0	..	0 5 0
Additional clay puddle in passage	..	..	0 5 0
Sewerage	..	..	7 11 1
Water	..	..	4 11 10½
Total	..	..	12 2 11½

THIRD-CLASS HOUSE.—RENTAL £7 PER ANNUM.

WATER SUPPLY.	Price not Fixed.	Price for Fixing.	Total Cost Fixed.
	s. d.	s. d.	£ s. d.
10 lineal feet of ¾-in. galvanised tube	0 5½	0 3	0 6 10½
14 „ ½-inch „	0 4½	0 3	0 8 9
12 in. of ¾-in. lead pipe for water-closet pan	0 10	..	0 0 10
3 in. of india-rubber tubing for ditto	1 1	..	0 1 1
1 ¾-in. self-closing ferrule cock for do.	7 4	..	0 7 4
1 ½-in. elbow ferrule with union joint	1 6½	..	0 1 6½
1 ¾-in. „ „	2 3½	..	0 2 3½
1 ¾-in. socket piece	0 8	..	0 0 8
2 ½-in. elbow pieces	0 7½	..	0 1 3
3 ½-in. socket pieces	0 6	..	0 1 6
1 ½-in. bib-cock	3 4	0 6	0 3 10
1 ¾-in. stop-cock	5 2	0 6	0 5 8
1 ½-in. stop-cock	3 6	0 6	0 4 0
2 stop-cock covers	4 6	1 6	0 12 0
			2 17 7½
SEWERAGE.			
32 lineal feet of 6-in. earthenware pipe	0 5½	Price varies according to depth.	
14 „ 4-in. „	0 4		
1 „ 6-in. syphon	4 6		2 6 7
1 „ 6 to 6 in. junction pipe	1 6		
2 „ 4 to 6-in. taper pipe	1 4		
1 „ 6-in. bend	1 6		
1 kitchen sink	4 6	5 0	0 9 6
1 4-in. bell-trap for ditto	1 6	..	0 1 6
1 earthenware sink, basin, and syphon	6 0	3 6	0 9 6
1 water-closet pan and fan, old seat	8 6	8 6	0 17 0
1 6-in. bell-trap	2 6	6 0	0 8 6
Waste-pipe to kitchen sink	..	..	0 6 0
Ash-pit filled up and repaved	..	..	0 5 0
Sewerage	..	..	5 4 4
Water	..	..	2 17 7½
Total	..	..	8 1 11½

COST OF PRIVATE OR HOUSE DRAINAGE WORKS.

ALNWICK.

The cost of house drainage works necessarily depends, in a great measure, upon the position of the premises drained with regard to the main sewer; the length of drains required; the depth at which they are laid, and the character of the subsoil.

The following particulars are given as the average cost of house-drainage works in the towns named:—

	£ s. d.
Houses of 40*l.* rental, with one water-closet, cost about	15 3 3
Houses of 15*l.* rental, with one water-closet, cost about	7 11 1
Houses of 7*l.* rental, with one water-closet, cost about	5 4 4

The length of drain to each house in Alnwick, taken on an average of 516 houses, is 25½ yards.

The following list of loans, sanctioned under the Public Health Act (1848) and the Local Government Act (1858), will show to some extent the progress that has been made in carrying out sanitary works in England during the last twelve years:—

	£ s. d.
1850, 15th June to 31st December	41,665 0 0
1851, 1st January to 31st December	103,706 0 0
1852, „ „	246,470 0 0
1853, „ „	500,740 0 0
1854, „ „	599,893 0 0
1855, „ „	424,126 6 3
1856, „ „	522,703 16 5
1857, „ „	312,612 11 0
1858, „ 1st September	204,261 13 0
	£2,956,178 6 8

Amount of loans sanctioned under the Local Government Act:—

	£ s. d.
1858, 1st September to 12th August, 1859	269,905 13 0
1859, 12th August to 21st August, 1860	280,259 7 4
1860, 21st August to 1st August, 1861	356,192 0 0
1861, 1st August to 1st March, 1862	129,998 0 0
	1,027,355 0 4
	2,956,178 6 8
	1,027,355 0 4
	£3,983,533 7 0

This amount has been borrowed by 178 towns or districts.

Improvement in social and in sanitary matters has made rapid progress of late. Within the last half century, land drainage and town sewerage have ripened into sciences. From rude beginnings, insignificant in extent, and often injurious in their effects, they have become of the first importance. The introduction of machinery to make land-drain pipes and town-sewerage pipes gave a forward movement to civilization. Land, by judicious training and improved cultivation, is frequently doubled in value; and town sewerage, with other social regulations, frequently prolongs human life from 5 to 50 per cent. as compared with previous rates in the same districts; and, within my own knowledge, house property throughout a whole town is reputed to have been increased 25 per cent. in value by such works. Agues and typhoid fevers are reduced or entirely banished. John Howard, by his labours, has shown to the world what could be done for gaols and for criminals; Edwin Chadwick for town sewerage; and Florence Nightingale for camps, barracks, and hospitals.

With respect to the beneficial effects of sanitary measures, Sir G. C. Lewis, in moving the army estimates, said:—"There have been a large number of improvements introduced for the purpose of bettering the moral and sanitary condition of the private soldier. In the first place, there has been a great improvement in barracks; and I am happy to say that these improvements in barracks have not been unattended with important results. I will read for the committee some statistical returns, which I believe to be authentic, and which will show a marked improvement as regards the rate of mortality in the army. The returns are taken for two periods for an average of six years,—1830-36, and 1854-60, giving the number per thousand. The annual mortality in the household cavalry from 1830 to 1836 was at the rate of 14 per 1,000: in the latter period it was only 5 per 1,000. In other cavalry it was at the first period 15 per 1,000; in the latter only 6 per 1,000. Royal Artillery, 15 per 1,000 in the first period; in the latter only 7 per 1,000. Foot Guards, 21 per 1,000 in the former period, and only 9 in the latter. The Infantry of the Line, 17 per 1,000 in the former period, and only 8 per 1,000 in the latter. The returns for the colonies, of all forces, for the same periods, showed that for the former—namely, from 1830 to 1836—the mortality at Gibraltar was 22 per 1,000; but in the latter period only 9. Malta showed a diminution from 18 to 14 per 1,000; Ionian Islands, from 27 to 9 per 1,000; Bermuda, 35 to 11 per 1,000; Canada, 20 to 10 per 1,000; Jamaica, from 128 to 17; Ceylon, from 74 to 27. These are great results; and they are owing to the changes made in the sanitary condition of the army."

Since the year 1840 great and beneficial sanitary improvements have been effected in English towns. An annual mortality of 44 in the 1,000 has been reduced to 27; and 30 to 20, and even as low as 15. Human life has more value in England than in any other country in the world, entirely due to better sanitary arrangements.

It has been said, "as are the people so will be the government;" but my experience leads me to the conclusion that bad government necessarily makes a bad people. Temptation is the parent of vice, and opportunity the broad road leading to destruction. A little leaven of evil leavens the whole mass. Lord Shaftesbury, through the entire of his most valuable life, has appreciated the facts stated, and has devoted himself to teaching by example and by precept,—to preventing as well as to reforming. His "Common Lodging Houses Act" has probably done more good than any other law of modern times by removing temptation, and, therefore, preventing evil. Before the passing of this act there was no check to vice in its most disgusting forms. I only indicate that which I have seen, and cannot, consistently with the decencies of society, openly describe. I can only say that our civilization resembled those volcanic regions

where the internal fires of destruction made the earth tremble beneath the feet of the dwellers on the treacherous surface: a sudden outbreak might at any time take place, and overwhelm all in ruin.

Social improvement must begin in the upper circles of society, that it may descend in precept, and be enforced by example. Our own good Queen Victoria understands this. The great and wise Prince we have recently lost, and whom we so deeply mourn, fully understood this. The deep-thinking far-seeing ruler who sits on the Imperial throne of France appreciates the fact. In the International Exhibition of 1851 the model cottages of Prince Albert probably worked more human good, by encouraging home improvements, than all the glitter of precious stones, the wealth of jewellery, and the subtle refinements of art. The poor are utterly powerless to help themselves in matters of sanitary improvement. They cannot build their own houses, but must inhabit such as are provided by others. They cannot make the laws, neither can they administer such laws as are made. If the laws are wise they receive the benefits; if otherwise, they suffer. Social science, as it is termed, must be administered by the State; and this Lord Brougham fully understands. It will be an evil day for society when Government divests itself of all executive power in social and sanitary matters. Freedom is a glorious thing, but license to initiate and work evil against the general body of society for private gain is neither a safe nor a desirable state of freedom. A state which can tolerate cesspools, beer-houses, gin-palaces, and can license dancing saloons, must bear with vice, crime, lunacy, and pauperism in excess.

Wise imperial laws are required; and honest and intellectual administration, nationally and locally to secure sanitary progress, and the greatest amount of political contentment, commercial prosperity, health, and social comfort to a nation.

PARTICULARS OF SEWERS AS EXECUTED IN THE CITY AND TOWNS NAMED.

	Depth to Invert of Sewer.	Thickness of Brickwork.	Number of Bricks per Lineal Yard.	AVERAGE COST OF SEWERS PER LINEAL YARD.													
				Birmingham.			Buxton (in Rock).			Carlisle.			Chorley.			Tynemouth.			West Ham.			Worksop.		
Brick Sewers.	Ft. in.	Ft. in.		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
4 ft. 6 in. by 3 ft. 0 in.	10 0	0 9	432	1	11	6	—			—			—			—			2	3	3	—		
3 ft. 9 in. by 2 ft. 6 in.	10 0	0 9	384	1	8	0	—			1	3	6	1	14	2	—			1	18	1	—		
3 ft. 0 in. by 2 ft. 0 in.	10 0	0 9	304	1	6	0	—			1	2	6	1	5	5	—			1	8	8	—		
2 ft. 3 in. by 1 ft. 6 in.	10 0	0 9	248	0	19	0	—			0	18	6	1	4	8	1	5	6	1	3	9	0	19	9
1 ft. 6 in. diameter ..	10 0	0 9	208	0	18	0	—			0	16	0	0	17	6	—			—			—		
3 ft. 9 in. by 2 ft. 6 in.	10 0	0 4½	172	0	17	0	—			—			—			—			—			—		
3 ft. 0 in. by 2 ft. 0 in.	10 0	0 4½	136	0	16	0	—			0	17	6	—			—			0	19	8	—		
2 ft. 3 in. by 1 ft. 6 in.	10 0	0 4½	112	0	12	0	—			0	15	0	0	11	10	0	18	6	0	17	6	0	13	8
1 ft. 6 in. diameter ..	10 0	0 4½	88	0	10	0	—			0	14	0	0	10	11	—			—			—		
Earthenware Pipe Sewers.																								
15 inches diameter ..	10 0	—	—	0	9	4	0	11	3	0	9	6	0	9	10	0	9	2	0	11	10	0	5	9
12 inches do.	10 0	—	—	0	7	8	0	10	4	0	7	9	0	8	2	0	7	5	0	9	4	0	4	6
9 inches do.	10 0	—	—	0	6	5	0	9	0	0	5	9	0	5	4	0	5	7	0	7	3	0	3	9

QUESTIONS AND ANSWERS RELATIVE TO SEWERAGE WORKS IN THE TOWNS NAMED. MARCH 1862.

QUESTIONS.	ALNWICK.	BERWICK-ON TWEED.	BUXTON.	CARLISLE.	LANCASTER.	WORTHING.
What is the average annual expenditure incurred below the surface of the streets in cleansing the sewers?	Nothing.	From 10*l.* to 12*l.*	Nothing has been expended	None.	4*l.* in four years, or 1*l.* per annum.	Nothing. Works executed in 1854.
The number of sewers choked per annum, if any, and the causes of stoppage?	About twenty house drains per annum. Sand, dish-cloths, and sticks.	Four or five, from offals of animals, ashes, sand, gravel, &c.	None.	Not more than two or three per cent. in 9-inch pipe sewers, owing to flat gradients and backing up of floods. Direct stoppages are caused by improper substances being passed into the drains.	Average five at blank ends. Main sewers never stopped.	None.
Have you any complaints of sewage injuriously affecting fish in the river or stream into which it passed?	No.	No.	No.	No. Any complaints on this head have been in consequence of an overflow from the sleeper dipping tanks of a railway company passing into the sewers. Waste creosote.	No.	The sewage does not go into a river or stream, but out to sea.
Average annual cost of flushing sewers, if any?	2*l.* per annum.	Flushed occasionally by the Surveyor or his assistant, but at no additional cost to the Board.	They have only been flushed once during the last year.	Water given by Water Compy. Flushing and maintenance of sluices attended to by scavengers.	5*l.* labour only.	About 13*l.*
Do the sewers generally serve the purposes intended?	Yes, if properly used.	Yes.	The main sewers are all in good order, and work well.	Yes.	Yes.	Yes.

SUPPLY QUESTIONS IN HOUSE OF COMMONS.

THERE were several questions and replies in reference to votes of supply for the palaces and parks, &c., on the 31st ult., which we may here briefly notify. On the question that 33,583*l.* (first vote class 1) be voted for the royal palaces, Mr. W. Ewart expressed an opinion that many of the works of art, at present in Hampton Court Palace, should be removed nearer London; also, that copies of them might be taken and distributed through the chief towns of the country. As they were circumstanced at present they were liable to be destroyed by fire. Lord W. Graham observed that the process of cleaning pictures had been given up at the National Gallery, and inquired why it was still continued at Hampton Court. After a few words from Mr. J. Rogers as to whether the cartoons in Hampton Court Palace were insured against fire; Mr. Cowper said it was not the practice to insure any of the Government property, but they considered it desirable to take every precaution to protect that property against fire. The sum of money which had been voted for the purpose of cleaning and varnishing the paintings in Hampton Court Palace would be expended under the direction of Mr. Redgrave, who superintended the cleaning of all the royal paintings. The pictures at Hampton Court had not been touched for many years, and some of them were literally perishing for want of varnishing, and it was absolutely necessary that they should be cleaned. Mr. Redgrave would be responsible for the manner in which the work would be done. As to bringing the cartoons to London, there was much to be said in favour of it, but at present there was not an edifice suitable for them; but when the National Gallery should be enlarged ample accommodation would, he supposed, be made for these cartoons.

In reference to the Trafalgar-square fountains, Mr. Cowper said he quite agreed that the fountains were in a condition that Englishmen might well be ashamed of. But he promised that in the month of May they would be in such a state as every Englishman would be proud of. The water which now supplied the fountains was water which had already been used in the condensing part of the engine, and which was thereby raised to a very considerable heat. It was then sent out to cool, and again returned to the condensing part of the engine. That inconvenience, however, in future would be remedied.

Sir S. M. Peto urged upon the Government to adopt some well-considered plan for the consolidation of the public offices, for which the country were now paying a rent of 27,000*l.* a year. He thought such a building might be erected for 300,000*l.* or 400,000*l.*

With regard to Battersea Park, Mr. Cowper said it had been complained that the anticipations held out to the house of a great return from that park had been disappointed; but if that were so it arose from the want of a proper main drain, without which the land would not let for building purposes. When the great southern sewer was completed the return would come. The toll on the bridge, as the hon. baronet had stated, was another obstacle in the way of letting the sites.

FLEXMORE'S MONUMENT.

A MONUMENT has been erected in Kensall-green Cemetery to the late Richard Flexmore, the "clown." It consists of a double plinth, with a pedestal and cornice. The upper part of the pedestal has on the angles four masked heads, representing Tragedy and Comedy on one side, and Music and Poetry on the other. Suspended on the four sides are festoons, composed of oak and ivy leaves, bound with ribbons. On the front is carved, in relief, a tambourine, walking-stick, and slippers, with an urn entwined with a laurel wreath. The height of the whole monument, complete, is 9 feet 6 inches. The design was furnished by Mr. Richard Wynn Keene, an artist familiar to the play-going public under the pseudonym of "Dykwynkyn," and has been executed by Mr. John Chapman, sculptor of Lambeth. It is thus inscribed:—

"In memory of
RICHARD FLEXMORE GATTER,
Who died August 20th, 1860.
'A fellow of infinite jest.'—*Shakspeare.*
This tribute in estimation of worthiness and talent is erected by sincere friends and fellow-artists."

STAINED GLASS.

Canterbury Cathedral.—The east window of the Warrior Chapel in Canterbury Cathedral has recently been filled with stained glass dedicated by the officers, non-commissioned officers, and privates of the "Buffs," to the memory of their brethren in arms who fell in the Crimean campaign, 1855-6. The window contains five main lights and tracing of ten principal lights. The idea suggested in all the subjects is typical of conquest—No. 1, Abraham offers Isaac; No. 2, Israel conquers Amalek; No. 3 (the centre), our Lord crowned, and bearing the banner of the Resurrection, is met by the spirits in prison; No. 4, Gideon conquers Midian; No. 5, Jehu conquers Ahab. In the upper part of the centre lights is shown the regimental flag. The whole memorial, in design and execution, was by the Messrs. O'Connor, of London.

Llanspythidd Church.—The west window of Llanspythidd Church, near Brecon, has just been filled with a stained-glass window. The new stonework for the same was designed and carved out by Messrs. Williams & Sons, architects, Brecon. The window is composed of three separate openings, containing a figure of Hope, with the anchor; the centre compartment being a figure of Faith, and the other a figure of Charity clothing a child. These figures are placed under canopies, on ruby and blue background. The tracery head of the window is filled with the crest of the Church Pearce family, the smaller parts filled in with rich foliage, and the two on each side of the crest have the emblems of Faith, Hope, and Charity. The artist was Mr. C. Gibbs, of London.

Holy Cross Church, St. Helen's.—Some stained-glass windows have lately been erected in a new church just about to be opened in this place. There is a series, fourteen in number, executed by Messrs. Pilkington, of this town. They are in *grisaille*, with coloured borders, and shields with

the instruments of the Passion of Christ, and with angels in the tracery bearing scrolls with texts. The style is that of the early part of the fourteenth century. The same firm has executed for the same church a two-light window, with full-length figures, under foliated canopies of S.S. Mary and Joseph; a memorial window, in three lights, divided by a transom, with a representation of the Transfiguration, the figure of Christ in the centre, Moses and Elias occupying the side-openings, the inferior ones filled with figures of S.S. Peter, James, and John; the whole under canopies of the Decorated period;—also a large four-light window, occupying the end of the south transept, and representing, under canopies, the finding of the cross by St. Helen, mother of the Emperor Constantine: the subject runs through the four openings, with figures nearly life-size, and the tracery is filled with angels bearing texts.

Alnwick Cemetery Chapel. — A three-light stained-glass window has been placed in the west end of the Episcopal chapel, in Alnwick Cemetery. Each light contains a distinct subject. The first shows a Miraculous Draught of Fishes; the centre, the Resurrection; and the third, Christ walking on the Sea. Each is surmounted by a canopy, and has an ornamental border at the base. The glass has been executed by Messrs. Clayton and Bell, of London. The same artists have made three windows for Warkworth Church. The memorial is executed at the sole cost of Mr. F. R. Wilson, architect to the Burial Board, Alnwick, in grateful remembrance of personal friendship with the deceased curate.

Windows for the International Exhibition.—A stained-glass window, intended for the east window of St. Mary's Church, Maidstone, Kent, has been prepared at Mr. Holland's, of Warwick. The window is 40 feet high, and consists of three compartments. The centre one represents the Crucifixion, the right-hand compartment the Baptism, and the left the Nativity.——In the premises of Messrs. Ballantine & Son, of Edinburgh, are two windows, described in the *Scotsman*, — one for a church, the other for a hall — being portions of the glass prepared by these gentlemen for the ensuing International Exhibition. The church window, executed for Prestolic Church, Lancashire, consists of five upright lights, with tracery. The subject is the Crucifixion, which is carried across the entire breadth of the window; each compartment having its canopy, base, and Mosaic groundwork; thus securing the necessary architectonic distinctness. In the tracery, angels are represented bearing scrolls with inscriptions. The hall window is for South Bontaskine House, which stands on the ground where the battle of Falkirk was fought in 1745. This window consists of three compartments, each of which contains a figure. Armorial bearings are introduced in the panelling over and beneath the figures; and each light is surrounded by an embattled bordering. The centre figure represents Prince Charles Edward Stuart, dexter Lord George Murray, sinister Lord John Drummond, the two chief officers of the Prince. They are arrayed in the full Highland costume of the period; and the likenesses, dresses, and accoutrements, seem to have been studied from authentic sources. The same artists have nearly completed three or four other large windows which are to be sent to the Exhibition.

COMPETITIONS.

St. John's, Battersea.—In a limited competition for the proposed new church of St. John's, Union-road, Battersea, the design marked "Apropôs," and prepared by Mr. E. C. Robins, was chosen, out of ten designs submitted. The working drawings are now being prepared.

LOCAL SURVEYORS AND THEIR REWARDS.

By the passing of the Local Government Act, 1858, Building Acts were applied in the form of by-laws to districts of local boards of health.

By the Local Government Amendment Act of 1861, very onerous duties were imposed on local surveyors in connexion with new roads.

It is notorious that local surveyors are underpaid, and that local boards are generally so constituted as to render it natural for them to underestimate the value of such services and labours; and the Legislature makes no provision for rewards proportioned to the increase of responsibility imposed from time to time.

Either a scale of fees should be prescribed, as in the Metropolitan Building Acts; or else all exceptional undertakings should be made the subjects of special and legal commission.

The present stage of the second Local Government Amendment Act now before Parliament presents an opportunity of rectifying these habitual, if not intentional omissions; and it is to be hoped that all local surveyors, true to themselves, will not allow it to pass without an effort to secure some tardy measure of justice. Let every one of them address the Home Secretary with his arguments on the subject.

THE FEMALE SCHOOL OF ART.

THE Lord Mayor has kindly consented to preside on Wednesday, the 30th of April, at a meeting in the Long Parlour of the Mansion House, at two p.m., to promote the objects of the Female School of Art in Queen-square, which, as our readers know, is to assist in the solution of one of the great social problems of the day, "Employment for Women." The committee have bought their freehold premises: they have an admirable manager,—100 pupils full of zeal, and who have carried off a large share of prizes in the Governmental examinations;—but they want still 1,500*l.* to complete the establishment, and render it self supporting for 150 pupils. With such elements of success and hopefulness, and with the Government aid, we feel that they ought to be enabled to complete the good work.

We shall hope to see a good muster in the Long Parlour on the 30th, and that the result will be the *permanence* of the Female School of Art.

SCHOOL-BUILDING NEWS.

Potters Bar (*Middlesex*).—An infant school has been completed here, at the sole cost of the Rev. H. G. Watkins, the incumbent, the site also having previously been granted by him. The school-room is 22 feet long by 15 feet wide; the height to the ridge being 22 feet. The roof is constructed of open timber, plastered between the rafters; which, together with the rest of the internal woodwork, is stained and varnished. The porch is paved with Minton's encaustic tiles. A residence is attached. The external walls are constructed of picked stock brickwork, interspersed with a few white Suffolk bricks and red malms, with dressings of Bath stone. The roofs are covered with alternate bands of Bangor and Westmoreland slates. The bell-cot is covered with zinc, and surmounted with a wrought-iron ornamental vane. The architect is Mr. E. H. Lingen Barker. The cost of the works, including the boundary-wall, &c., is about 500*l.*; the contractor being Mr. J. F. Williams, of Potters Bar.

"COSTLESS VENTILATION."

MY attention has just been directed to a statement headed "Costless Ventilation," which appeared in your esteemed columns March 1st last, signed "Peter Hinckes Bird, F.R.C.S., F.L.S."

This gentleman appears to court publicity by attacking some one in the following dogmatical lines:—

"For some time I adopted the plan of opening the window-sash at my patients' houses at the top, and stretching out on a frame a corresponding depth of tarlatan, to intercept blacks and prevent draught; but, although a modification of, but not an improvement on, this method has the support *of a popular lecturer at an institution for the diffusion of art and science, the principle is wrong and the result unsatisfactory*, as the draught is directed downwards on the sitter, and not upwards towards the ceiling: the screen, too, is anything but ornamental, and becomes clogged with blacks, so as to require removal and repair."

Presuming the popular lecturer to be myself, I may first be allowed to express a doubt whether it is good taste to attack another person's invention in order to puff your own; and secondly, I may be permitted to remark that if Mr. Peter Hinckes Bird had attended my lecture "On Ventilation," he would have discovered that his tarlatan invention had long since been anticipated by other persons, who have nailed a piece of wire gauze across the panes of the window, and, when they required fresh air, have lowered the top sash to correspond with the breadth of the wire gauze.

They have very judiciously preferred to use a material that could be brushed and cleaned, instead of an unsightly rag that would become soiled and require *removal* and *repair*. The fact of the tarlatan or wire gauze becoming clogged with blacks is one of the proofs of the efficacy of the system; and shows that whilst the external air has entered the room the "blacks" have been filtered out of it before being used for respiration.

As to the wire gauze becoming clogged with blacks, I have yet to learn that because a substantial article becomes dirty in a sooty atmosphere it is to be regarded as comparatively useless. No doubt Mr. Bird's argument applies to his own "tarlatan," but not to good wire gauze, which is easily cleaned with a proper brush.

Mr. Cooke's plan is not a modification of the "tarlatan" system, but of the wire gauze one; and I have also stated in my lectures that Mr. Palmer has used and patented perforated zinc cylinders, to be placed in the opening left by drawing down the top sash and drawing up the bottom one; whilst Mr. Mainwright has patented the insertion of small copper tubes in the top and bottom bars of the sash windows. All the patentees have endeavoured to arrange their plans for the entry of fresh air and the exit of the foul air; and I have shown, in Cooke's ingenious and simple folding wire gauze system, that, when a room is full of company, the lights burning, and the doors closed, the top fold permits the hot air to escape, and the bottom one allows the cold or fresh air to enter, gently warmed by the wire gauze, which is generally a few degrees warmer than the external air; whereas, Mr. Bird provides only one narrow slit or opening for this purpose, which he says will not permit *heavy blacks* to ascend and enter. And he says,—

"The method I now use is simple, economical, quite free from draught, and does not get out of order. *Raise the lower sash* of the window, and place in front of the opening, at the bottom rail, a piece of wood of any approved depth: this leaves a corresponding space between the meeting-rails in the middle of the window, through which the current of air is directed upwards towards the ceiling: *heavy blacks* cannot ascend with the air, which is driven so high as to be warmed before it descends. The principle may be modified in various ways, making the bottom frame of wire blinds supersede the strip of wood: in a word, open the lower sash of the window 2 or 3 inches, and block it up anyhow, and the air enters the space in the middle, and is carried to the ceiling."

I can quite believe that *heavy blacks* will gravitate to mother earth; but it is the "*light blacks*" we have unfortunately to contend against; and they would undoubtedly ascend Mr. Bird's space between the meeting-rails in the middle of the window. Moreover, the working of Cooke's plan depends on *lowering the top sash;* and, when that is done, he not only uses his own system, but that claimed by Mr. Bird; and with better effect; as the warmed and foul air may escape by the wire gauze at the top, and the cold air enter through Mr. Bird's space, between the meeting-rails in the middle of the window.

Polytechnic. JOHN HENRY PEPPER.

THE KEAN TESTIMONIAL.

SIR,—I beg to congratulate you on the honesty of your remarks in reference to the memorial productions of "Our Silversmiths." An event recorded in your columns, which ought to have redounded as much to the credit of the art of design and the manufacturing skill of our country, as to the honour of a distinguished countryman, has certainly disgraced the former; and must, apart from the associated expression of goodwill, give pain to the highly-cultivated taste of the latter—perhaps even a keener sense of suffering from the conglomeration of "shreds and patches"—the ill-assorted cullings of all manners of outrageous designs, employed almost in mockery of the genuine sentiment by which the testimonial was dictated. An assemblage of objects more puerile in taste, less allied to utilitarian capabilities, and displaying more palpable imbecility, it would scarcely be possible to produce. Your notice of this "getting-up" will not pass without its reward.

JOHN BURTON.

MAJOLICA.

AFTER looking-glass, perhaps there is no article of ornament in which the million indulge so much as china. And what trash they buy! But in this there is some blame to be attached to the manufacturers. As to Sèvres with its light blues and pinks, I must say I cannot see that it can improve taste: the very colours that are in vogue with it are wanting in the richness, vigour, and grandeur of the majolica colouring. It is with majolica that the eye can be more delighted than with any other in colour, form, life, and grotesque; but there is little or no majolica for the million. It has been splendidly revived; but all design in it has been more or less Renaissance in character: there is no design in a vigorous style.

In modern majolica there is much very bad design, such as natural tulips, and snakes curling round them; incipient dolphins, and the like; inanimate copies of nature, instead of any ornamental treatment of the ware. What we want, then, are some simple but vigorous designs, with fine colouring, rich and warm, and plenty of good grotesque; some flower vases of good form and

moderate price; in order that the million may learn, by this their favourite ornament, better ideas of form and colour; and that they may learn to take an interest in great art. If architects should design for pottery, they should take care not to introduce stone construction, as they too constantly do in wood-furniture,—always arching; but rather remember the material they have in hand, and its peculiarities. Wood and pottery are not stone. This, then, I would suggest to manufacturers, that they get something else than eternal Renaissance designs, and give the nineteenth century work a character of its own, expressive of our present thought and sentiment. A. W.

ST. LUKE AND THE PAINTERS.

ST. LUKE the Evangelist was not the painter of the wretched mulatto Madonnas which go by his name, and of which daubs most Catholic countries can boast two or three; but one "Signor Luco," who flourished in the fifteenth century; whose works were, by a "pious fraud" of the monks, attributed to the saint, as more likely to command the reverence of the ignorant, who were also taught to regard the pictures as "miraculous." You will find this mentioned *in extenso* in the "Private Diary of the Duke of Buckingham," recently published.

Were not the pre-Raffaellite painters of the present day giving some sanction to the Mediæval legend, I should recommend artists to abjure the patronage of so apocryphal a saint, and choose one of less Bedlamitic pretensions.

C. W. D.

BYZANTINE AND GOTHIC.

I LIKE A. W.'s remarks on Byzantine decoration: even their faults display a genuine feeling which is vigorous and noble. I fear it cannot be viewed as the olive-branch held out by the Greeks to the Goths; as he explains his use of the word "Byzantine" as synonymous with "Romanesque;" but, to show him how near he is to being a Goth, I will mention that, on the very day his remarks were being printed, I wrote nearly as follows:—"Byzantine is the connecting link between Classic and Gothic: its interiors, excepting Gothic, are the most beautiful in existence; and offer, *without any exception*, the finest field for decorative painting." I was speaking of *true* Byzantine, but in A. W.'s sense,—the Romanesque of the twelfth century; and, subject to his one acknowledged desideratum, the pointed arch we are absolutely united. The Gothic which he thinks trifling in its details must be the *later* Gothic. There is, however, a Gothic of the twelfth century, as at Notre Dame and St. Germain des Près, in Paris; at Sens, Noyon, Canterbury, Glastonbury, St. Cross, &c.; which is his Byzantine with the addition of the pointed arch; and in this Gothic we greatly rejoice: nor will we complain of an ally using the round-arched Romanesque or the domed Byzantine, and helping us to mould them into one style with the matured Gothic of the glorious thirteenth century; preserving the beauties and eschewing the faults of both. A GOTH.

PUBLIC WASH-HOUSES.

SIR,—With reference to your article on closing Portpool-lane Wash-houses, I think, provided the washing apparatus is not fully employed, the Society have in their employ inefficient persons. This can be the only reason for the washing apparatus not being fully engaged. Look to the neighbourhood,—Hatton Garden, Leather-lane, Holborn, &c. Suppose a person with good address were to call at each house, see the keeper of each, explain as you have done, or give a copy of your article to each; and tell them they could do a great public service, and perform a very great charity, which would do great good in many ways, without any cost to them, but a saving to them, by looking out for some poor deserving woman, and letting her call on the housekeeper, weekly, or oftener, and wash the clothes at the wash-houses, paying the woman for her time, and paying the wash-houses their charges, I feel convinced that the Wash-house Society would find it to their interest to enlarge their means of washing, and provide a woman to look to the things so sent to be washed being properly done.

We are not to follow the man with his wheel fast, praying, or expecting to be relieved without ourselves using any means. A hint of this kind to the Society and to the public generally might do good. Continue in your present course of sanitary teaching, and you will have a full reward in the life to come, but do not look for any return in this over busy world. S. P. X.

CAN TWO STYLES FLOURISH TOGETHER?

I SHOULD be very glad if you could find room for a few words on a subject which, it appears to me, must materially affect the prospects of architecture in this country; but which has not, so far as I am aware, met with its due share of notice in the conflict which has been raging about the styles.*

Most persons seem agreed that the Pointed style is the one best adapted to ecclesiastical buildings in this country; but there is by no means the same unanimity with regard to civil or domestic architecture. I leave to more able disputants to discuss this question on its merits, and to show whether Classical or Pointed architecture lends itself most readily to the requirements of modern civilization. What I wish to suggest is,—is it possible for more than one style of architecture to exist at one time? Is there any nation whose architectural history shows us such a phenomenon? Of course I do not deny that there are clever, well-educated architects in the present day, who will design buildings with perfect correctness in any given style; and it may be said, if so, what more do you want? I answer, I want a great deal more. I want to see architecture take root among us and grow. I want to see architects thoroughly imbued with the principles of construction, which are the foundation of styles; and able to rise by the application of those principles to the development of new forms of beauty. Now, as the principles of the Pointed and Classical style are entirely different, I cannot see how we can expect the same architects, or even the same school of architects, to cultivate both at the same time. It is no easy thing to raise up an art which has fallen so low as the hole-in-the-wall style of a London street, and make it produce forms of beauty. It certainly cannot be done, as it never has yet been done, unless there is some general agreement as to what that beauty is to consist in, and the principles which are to regulate it. Whatever schools of architecture have hitherto existed among us have been raised up in this manner.

The architects of the Middle Ages, when they built the cathedrals and churches which we acknowledge as models, were not called upon to divert their attention from the style to which they were vowed, to design a Grecian or a Roman palace; nor did the architects of the Renaissance suffer their gaze to be diverted from the Classical models on which they had concentrated their attention; even by those masterpieces of a bygone period with which they were surrounded. They did not allow that the principles of construction, which seemed good to them in one case, were out of place in another; nor why a church should differ, otherwise than in its adaptation to the purposes for which it was intended, from the civil and domestic buildings of the period. But now we are told this is all wrong;—Gothic is the proper style for churches, Classical for everything else. Are those who put forth this dogma aware that, although it has at no period been acted upon, yet that it has not even the merit of originality? Are they aware that an attempt was made in the reign of Charles I. to introduce the Pointed style for churches, while the Classical reigned everywhere else? And are they prepared to be ranked as the successors of Archbishop Laud and his school?

Certainly, if style in architecture were merely a matter of external ornament—if the decoration applied to the frame of the building determined the style—if the substitution of a pilaster for a buttress, or a Palladian detail for a Gothic one, converted a building from Gothic to Classical; why, then, I can see some ground for the distinction that is attempted to be drawn; but I cannot imagine any state of things more destructive of the real interests of architecture, and its progress as an art, than the prevalence of such an idea. Nor can I imagine, if architecture is to be pursued in this spirit, that it can be with the attention of any man of intelligence: it must speedily degenerate into a thing of shreds and patches,—of tinsel, and stucco mouldings at so much per foot.

It is perfectly true, as will no doubt be said, that after all the public will decide the matter: if they find the Gothic style convenient for one purpose, their buildings will be Gothic; if the Classical for another purpose, they will make use of it; and that architects will always take care that the supply shall equal the demand. Still, not the less on that account, but rather all the more earnestly, ought our architects to exert themselves in this matter, to guide and control that public opinion which they cannot force,—to become the educators of the people in this respect; and to endeavour to excite that interest and reverence for architecture, as one of the chief sources of beauty in this world, which they will never succeed in doing, unless they first show that they reverence it themselves. F. P. L.

* Our correspondent is apparently not acquainted with earlier volumes of the *Builder*.

DRY WALLS.

SIR,—In these days of cheap cottage building excitement, one hears of many expedients which, although not to be admitted into first-class practice, may still be worth a certain attention.

Amongst these is that of building hollow walls 10 inches thick; thus leaving a central cavity of one inch; the headers falling back to that extent from the internal surface, and being brought out by tiles dubbed in in cement. This method of building is recommended for various reasons, but principally as a preventive of damp in exposed situations, or where the bricks are of a more porous nature than usual.

A difficulty arises, however, and in this way:—As a matter of course, Flemish bond is the only bond possible in such walls; but supposing every header is taken through, any one can see that the chief object of the hollow is lost; not only because the clear spaces are only in reality 4½ inches by 1 inch; but because those spaces themselves, being so very small, inevitably get choked with mortar so thoroughly that the wall becomes, to all intents and purposes, a solid wall, admitting the damp as if no hollow existed. If, on the other hand, we only carry through, say, every third header, the work becomes scarcely substantial enough; though this, in fact, is the method most generally adopted.

I think the question is not unimportant, for I hesitate to fall back upon battening. It is bad in principle. Will any of your correspondents favour us with their experience? W. B.

Books Received.

Proceedings of the Liverpool Architectural and Archæological Society, 1860-61. Printed for the Society by Geo. Smith, Watts, & Co., Liverpool.

THE last part of the transactions of the Liverpool Architectural Society contains some very interesting matter. Some of the papers appeared in our pages at the time they were read. The book would take a more permanently interesting shape if the papers and addresses were printed separately, and the minutes of the meetings given at the end in the shape of an appendix.

VARIORUM.

"A Few Observations upon the Bill introduced by the Lord Chancellor to facilitate Conveyance of Real Estates. Draper, London." In this pamphlet Mr. Rupert Potter, Barrister-at-Law, comments chapter by chapter on Lord Westbury's Bill, and states such objections as occur to him. His opinion of the Bill as a whole is not made obvious.——"On Iron Breakwaters and Piers. By E. B. Webb, C.E., London. Lockwood & Co. 1862." Mr. Webb has designed and patented an open iron breakwater, which he believes to be free from the disadvantages of either floating or solid structures; and the objects sought, he remarks, are obtained;—1st. As to stability, by fixing the breakwater to the bed of the sea;—2ndly. As to prevention of silt, by allowing the tidal and other currents to pass freely through the breakwater;—3rdly. As to cost, by using (by preference), cast-iron in its cheapest form. We have no doubt Mr. Webb's breakwater will be very useful and economical in many localities where solid breakwaters would have a tendency to accumulate silt.—"Chambers's Social Science Tracts; edited by W. Chambers: Building Societies (W. & R. Chambers, London and Edinburgh)." This paper contains the able lecture delivered by Mr. William Chambers, at the Architectural Institute of Scotland, in Edinburgh, on 29th January last, and already noticed in our pages. It also contains an introduction relating to the same useful subject.——"Landlords and Labourers. By Robert Scot Skirving. A new edition. Blackwood & Sons, Edinburgh and London." This pamphlet, we believe, is being largely read in Scotland, and it well deserves to be so. Its chief object is to fix the attention of all interested on the deplorable want of houses for labourers in the agricultural districts of Scotland, of which, and of the abominable bothy system, we have often spoken. The author's object is a very disinterested one; inas-

much as the pamphlet, at the price, is not a paying one; and we sincerely trust he will ere long be repaid in the gratifying knowledge that he has hastened the advent of a better state of things, as regards domestic accommodation, for the poor labourer in agriculture; who, though providing the very staff of life for all, is amongst the worst paid and worst accommodated of all labourers, whether in England or in Scotland; and not much better off in these respects than the poor Irish peasant in his mud cabin.

Miscellanea.

THE NATIONAL PORTRAIT GALLERY, Great George-street, Westminster, will be open to the public on Easter Monday, Tuesday, and Wednesday, from ten to five o'clock.

THE NEW RIVER WATER COMPANY'S CHARGES.—A correspondent, on the part of himself and other "poor labouring people;" and who tenants a small house, in which, lately, an old woman of 74 rented a room, at 3s. a week, and made a living by washing; complains that the New River Company have raised his rate from 20s. to 38s. on account of this poor lodger; or, at least, that their refusal to reduce it was based on the ground that a laundress lived in his house. Our correspondent asks whether, by their act, the New River Company are entitled to levy rates on lodgers; and thinks it would be quite as reasonable were they to charge him extra for every additional child he may have.

THE MIDLAND NAIL AND CHAIN TRADE.—Both these trades are now in a somewhat depressed condition, according to the *Birmingham Journal*. Some of the nailmasters have for weeks, if not months past, been buying nails from their workmen at a reduction of 10 per cent. or more upon the prices ordinarily paid by the leaders of the trade. The masters called a meeting at Dudley, when a general reduction of 10 per cent. was resolved on. An almost general strike has ensued. Meetings of workmen have been held nearly every day at the Lye, Old Hill (the stronghold of the trade), Dudley, Hales Owen, and other places; and open-air assemblies and singing processions have not been uncommon. At these various assemblies resolutions have been unanimously passed, expressive of the men's determination not to return to work until the old price be given, and all the masters concur in paying one uniform rate of wages. Nailmakers' wages, even at the full rate claimed, are very low; only allowing an industrious man at work on 4-inch spike nails, for instance, to earn, by his own individual exertions, about 13s. 9d. a week, the price of five bundles at 2s. 9d. a bundle. Other sorts, of course, follow at proportionate prices. The men, therefore, consider it rather too hard upon them to attempt to reduce this 13s. 9d. to 12s. 6d. The chainmakers have a good many orders on hand, and the men think they should receive an advance upon their present rate of wages—a rather low rate, which has existed for some time past.

METEOROLOGICAL TELEGRAPHY.—At the Royal Institution last week, Admiral Fitzroy delivered a lecture, in which he gave "An explanation of the Meteorological Telegraphy, and its Basis, now under trial at the Board of Trade." Observations, he said, have shown that the currents of air in the atmosphere are regulated by fixed laws. The "law of storms" has been for some time recognized, and their directions have been accurately traced. These great disturbances of the atmosphere are found to be caused by opposing currents of wind, which give the air a rotary motion; and these whirlwinds, or "cyclones," are often of comparatively small diameter. By a careful study of the barometer and thermometer, and of the electrical indicator, called a "storm glass," the state of the weather at any place may be predicted with tolerable accuracy for three or four days in advance. The prognostications of the weather have thus been calculated; and the Board of Trade have, during the past month, sent them to the daily papers. At the beginning of 1861 the Board of Trade commenced the plan of telegraphing, to most of the ports of the kingdom, the forecasts of coming storms, which were based on observed sudden falls of the barometer at distant stations; a fall of the eighth of an inch of mercury in the course of an hour being considered a sure indication of an approaching storm. At first these warnings were disregarded by sailors; but the losses experienced by a storm in February of that year, which had been forecast and signalled, taught them to pay more attention to subsequent signals of danger; and in consequence many ships and numerous lives had been saved.

THE NEW FOREIGN-OFFICE.—In the Commons Mr. Cochrane asked the First Commissioner of Works what sum remained in hand, at the present date, of the 60,000*l.* already voted for the New Foreign-Office; and whether the additional vote of 15,000*l.* would be expended within the present year? He wished also to ask whether the State Paper-Office, which had only been built thirty years, was to be pulled down? In reply, Mr. Cowper said that the sum expended already was 56,900*l.*, and probably the additional vote would be required before the estimates of next year, 1862-3, became available. The State Paper-Office would be pulled down, as the House had been informed last year.

NEW PATENT IN POTTERY.—Messrs. J. C. Coombe and James Wright, of Blackfriars, have taken out a patent for improvements in the manufacture of glass, pottery, porcelain, and other ceramic and plastic wares. This invention consists in the application of fluo-silicates and silicates of alkalies, or alkaline earths, and earthy bases, and precipitated silica, to the manufacture of glass, pottery, porcelain, and other plastic and ceramic wares. The patentees claim more particularly the substitution of the fluo-silicic salts of the alkalies, alkaline earths, and other earthy bases, for the phosphoric compounds of the same or other bases, in the manufacture of glass, pottery, porcelain, and other ceramic and plastic wares.

THE SANITARY CONDITION OF LEICESTER.—Mr. Moore, in his annual report on this subject, says, I regret to state that my report for 1861 will not be so favourable as that for 1860; the mortality returns showing an increase of 367 upon the previous year; the number registered being 1,418 for 1860, and 1,785 for 1861. The increase in the mortality for the year 1861, above that of 1860, extends throughout every quarter of the year, but principally the second and third. In the latter quarter alone it amounted to 201; one half of which arose from diarrhœa and consumption; viz.—75 in diarrhœa and 26 in consumption. The deaths from fever in 1860 were only 11; but in 1861 they increased to 61. From 1852 to 1862, however, the mortality was upon an average 77 per annum. The localities in which fever has been most prevalent are Upper Conduit-street and Northumberland-street with Old Mill-lane; and upon inspection it was found that in that portion of Upper Conduit-street where the disease prevailed no drainage had ever been formed, and in Northumberland-street and Old Mill-lane, it was in a very unsatisfactory state. The Board therefore at once ordered proper sewers to be constructed.

ECCLESIASTICAL DILAPIDATIONS.—The Dilapidations Bill has been introduced by the Archbishop of Canterbury. There is to be a sufficient number of fit persons appointed in every diocese as surveyors of ecclesiastical dilapidations; but neither existing bishops, deans, canons, nor incumbents, are to be subject to the Bill unless they choose to submit to it, and thereby, after executing the repairs prescribed by the diocesan surveyor, free themselves for five years from all liability, even to a successor, except for damage by fire, flood, or tempest. But new incumbents may not only invite, but are to be liable, on the application of the archdeacon or the patron, to a visitation and report from the surveyor; the incumbent having power to appeal against the report to a referee appointed by the bishop. Extraordinary repairs prescribed by the report, with the surveyor's costs so far as relates to them, are to be defrayed by a grant from Queen Anne's Bounty fund, repayable as a charge on the benefice in yearly instalments not exceeding thirty. The ordinary repairs, with the surveyor's costs so far as relates to them, fall upon the incumbent; and if he neglects to execute them in the manner and within the time prescribed by the report, or within such extended time as the bishop shall grant (of which neglect the surveyor's certificate is to be "conclusive evidence"), the bishop is to authorize the execution of the works, and raise the amount by a sequestration of the profits of the benefice.

BOROUGH IMPROVEMENTS.—Sir: Looking at the opening for our new street in the Borough, I cannot help imagining the space from where the town-hall stood, with the intervening houses cleared away, to make a direct opening from the High-street. Future generations will certainly look with contempt on our want of taste and meanness combined in not completing a good idea and making a *place* ornamental and worthy of the age in which we live. When the railroad crosses near the bridge, the necessity for this improvement will be more apparent.

A TWENTY-FIVE YEARS' RESIDENT IN THE BOROUGH.

ORDNANCE SURVEY.—Up to the end of March, 1861, there had been expended upon the Ordnance surveys of England, Scotland, and Ireland, the sum of 2,616,447*l.*

IPSWICH IMPROVEMENT.—Sir: I see that a plan for the sewering of the town, by a "C.E. *and photographic artist*," has been laid before the local Board of Health. Pray allow me to warn the town against employing a photographic artist on such an important matter as this.—A SUBSCRIBER.

DRAINAGE.—We learn from *Galignani* that plans in relief, accompanied by lithographed drawings, of the rich pastures and School of Irrigation of Lézardeau, near Quimiperlé (Finistère), have been exhibited in the Salle des Pas-Perdus, at the Palace of the French Legislative Body. These plans are to form part of the French Exhibition at London, and are extremely interesting, as showing how agricultural skill can improve the most unpromising soil. The Government, struck with the results obtained by M. Decouedic, has founded at Lézardeau a school of irrigation, for teaching all the best means of reclaiming waste land.

GAS.—The express train from Manchester to London has been provided with appliances for securing a constant supply of gas throughout the passenger carriages, guard's van, &c.——A prospectus has been issued of the Singapore Gas Company, with a capital of 100,000*l.*, in shares of 5*l.* each. The town contains about 5,500 houses, exclusive of public buildings; and land for the works has been conditionally granted by the governor, while the municipality are prepared to arrange a contract for lighting the streets, &c., for a term of years. The calculations of profit are based on the assumption that coal must be obtained from England; but the belief is that much cheaper supplies will soon be procurable from the Labuan mines or from those of India or Australia.

HYDRAULIC SHIP-LIFTS.—At a recent meeting of the Liverpool Polytechnic Society, a description was given of a model exhibited by Mr. Walker, and entitled a "patent hydraulic ship-lift," invented by himself. The floating dock consisted of two series of pontoons; eleven on each side; and each held firmly together by four powerful wrought-iron tubular keelsons, which were ranged along the top. The pontoons were moored parallel to each other at about 60 feet apart, and a tray or skeleton work suspended between them, which tray was attached to hydraulic presses. The trays could be lowered to any depth, and the vessel floated between the two keels of pontoons and raised out of the water by the powerful lift of the presses in about one or two hours. A vessel of 1,000 tons could be thus lifted in half an hour with perfect ease. The leading objects of the invention were the total expulsion of water, avoiding rapid deterioration by oxydation; secondly, ready access to all parts of the dock without stopping the work going on; and the advantages were dispatch and a large saving of expense. The hydraulic power involved was 6,000 tons, capable of lifting 2,000 tons. The engines required for working the dock were one on each side of from 20 to 30 horse-power. The length of the structure was calculated at 300 feet, with 60 feet beam inside and 130 feet over all.

FIRES IN THE METROPOLIS.—The committee appointed to inquire into this subject has had meetings. In the Lord Mayor's evidence his lordship said he would not suggest the establishment of a fire brigade for the whole kingdom, but only for the metropolis. The expense of the fire brigade of Liverpool, which has been stated as being very efficient, is paid out of rates levied upon the owners of property. He thought that 15 per cent. out of the Consolidated Fund would pay for the protection of life and property from fire. He proposed the repeal of the Fire Act, which compels parish authorities to provide fire engines. Questioned by Mr. Cowper, his lordship stated that he understood the insurance offices had come to a resolution not to continue the fire brigade. He thought they ought to have something to say in the matter; but they ought to contribute something towards the expense. He thought it desirable to have the fire brigade distinct from the police. Besides their not being skilled, there are a great many objections to making the police force firemen. He considered that a sum of 200,000*l.* a year would be required for the purposes of the force, to be limited to the metropolitan area. The business of the insurance offices would increase enormously if the duty on insurances was reduced as proposed. To the owners of property the imposition of any new tax would be obnoxious, but the insurance offices ought to pay something to the rate.

ARTISTS' BENEVOLENT FUND.—The dinner in aid of the Artists' Benevolent Fund took place on Saturday, the 30th ult., in Freemasons' Hall. Mr. Charles Dickens presided, and made a very excellent address. There was a strong muster of Royal Academicians, and others; and the amount subscribed was nearly 650*l*.

THE TOWER. — Every part of the Tower is undergoing alterations. In the White Tower, the Great Banqueting Chamber, as well as the Council Chamber above it, are now studded with arm racks, sufficient to contain thousands of arms. Hundreds of men are employed, particularly carpenters, in getting the old garrison in proper order for the reception of foreigners during the Exhibition.

THE NEW RESERVOIR AT CONYGREE.— The arrangements for supplying Dudley with service water from the South Staffordshire Company's reservoir at Lichfield, are now complete. The water will be conveyed from the Lichfield pumping station through 12-inch main pipes into the new reservoir at Conygree, near Dudley; and from the latter reservoir it will be pumped up into a second reservoir on a higher level, at Shaver's End. From this latter place the town and neighbourhood will be supplied. The whole of the works are now in full operation, and have been executed to the satisfaction of the company's engineers (Messrs. M'Lean & Stileman) by Messrs. J. & G. Davies, of Tipton.

SANITARY REFORM AT BIRMINGHAM. — It having been resolved to summon a meeting of ratepayers and owners of property, to take into consideration and determine upon the expediency of adopting the Local Government Act of 1858 in the suburban parish of King's Norton, a meeting was held at which the chairman put the resolution, "That the Local Government Act of 1858 be adopted in the parish;" but no one being in favour of the motion, the chairman declared that the decision of the meeting was against the adoption of the Act. A desire having been manifested that the Act should be carried out with respect to Balsall Heath, it was stated that to carry out the object it would be necessary to memoralise Government, and to have a petition signed by one-tenth of the ratepayers and owners of property in the district; and for this purpose the necessary steps were authorized.

THE NEW ROYAL ARTILLERY HOSPITAL, WOOLWICH.—Progress has been made in the preliminary arrangements for the erection of the Royal Artillery Hospital, in the district of Woolwich and Charlton, on Kilbrook Common. The frontage facing the Dover-road, which divides Woolwich and Kilbrook Common, will be 900 feet in length. The infirmary ground will extend over an area of eight acres. The difficulties of forming a solid stratum for the foundation walls have been found greater than was anticipated from the boggy state of the subsoil, which, in some places, has required a layer of concrete 4 feet in depth. The materials for this were carted from the gravel quarries at Plumstead, a distance of about three miles. The establishment intended for washing the hospital linen by means of strong machinery, commenced last year on Woolwich Common, is roofed in. The period for the completion of the building is three years.

IRON BEAMS.—In referring back to a letter in your issue for the 1st of February last, I saw one in which I think the writer ("T. M.") must be labouring under some misapprehension of Mr. Fairbairn's teaching as to the proportion the *top* flange of a wrought-iron beam ought to bear to the bottom, &c. What "T. M." states may be erroneously mentioned in the pocket-book he quotes; but it is certainly not what is mentioned in Fairbairn's latest work on the subject, at least. It is there stated, I believe, that the proportion the *top* ought to bear to the *bottom* flange is as 12 to 11,—very different to that mentioned by "T. M.;" and also that in two beams of equal strength, the *wrought* would be rather less than one-half the weight of the *cast*-iron one. I think these facts will considerably modify his other queries. He also seems to leave out the upright plate, or web, altogether, in his calculation. As bearing on this subject I may mention that the resistance of cast iron to a *tensile*, as compared with its resistance to a *crushing* force, is (from a mean of eighteen experiments on eighteen different irons, made by the commissioners appointed to inquire into the application of iron as used for railway purposes) as 1 : 5·636—the highest result (Mr. Morris Stirling's second quality iron) being, tensile, 25,764 lbs.; and crushing, 125,333 and 119,457 lbs.; and the lowest (Low Moor No. 1 iron) being, tensile, 12,694 lbs., and the crushing, 64,534 and 56,455 lbs.—HENRY PRICHARD, C.E.

PARISIAN SYNAGOGUES.—Two new synagogues are to be built in Paris, at a cost of about three millions of francs. Towards this sum M. de Rothschild has contributed 200,000 francs.

CHURCH BUILDING AT PECULIAR EXPENSE.—A liberal brewer has built a church at his sole expense, but unfortunately the stone engraver cut the stone, which was to immortalize the brewer's name, with—"Built by — —, at his '*Soul's* expense."

NEW GREEN DYE.—An invention has been provisionally specified by Mr. P. Morin, of Paris, which consists in the production of a green colour or pigment by the treatment of oxide of manganese. Protoxide of manganese is transformed into a crystalline transparent substance, and takes a very rich green colour and diamond-like brilliancy when treated with hydrochloric acid in the gaseous state.

STONEHAVEN.—The contracts for the new office for the Bank of Scotland are now arranged. The following are the firms whose estimates are preferred, viz.:—Messrs. J. Burness, for the masonwork; D. Thompson, for the slater work; Jas. A. Mitchell, for the plumber work; A. Cormack, for the plaster work; and J. Thomson, of Laurencekirk, for the carpenter work. The four fronts of the building are to be of stones from Burntisland, the same as were used for the erection of Ury House.

GUERNSEY.—The "Brethren" have erected a chapel in Valnord-road, close by Victoria-road. This meeting-house, which measures 64 feet by 54 feet, is a substantial building, erected in the short space of six months.——Messrs. J. Reidy & T. Swingler, the patentee and engineer of the steam stone-breaking machine, have arrived in Guernsey; and, having received tenders from contractors for the erection of yard-walls, sheds, &c., required, have now decided to cause the same to be built without delay. The machines are calculated to crack from fifty to one hundred tons of stone daily.

TENDERS.

For the erection of the mansion dairy at Wimpole, for the Right Hon. the Earl of Hardwicke. The clerk of the works on the estate (Mr. Erant) architect:—

Thoday & Clayton	£1,075 0 0
Bell & Sons	970 0 0

For a villa at Wimbledon Park, for Mr. J. K. Andrews. Mr. Francis H. Fowler, architect. Quantities supplied by Mr. William Harris:—

Munro	£2,087 0 0
Messrs. Dove	1,885 0 0
Little	1,880 0 0
Oxford & Co.	1,880 0 0
Rider	1,845 0 0
George	1,790 0 0

The tender of Mr. Perry, builder, of Stratford, has been accepted for altering premises, Stratford Broadway, for branch bank for the London & County Banking Company. Mr. John M. Dean is the architect. The front will be of white Suffolk malms, with Portland-stone dressings.

For repairs to house and premises, formation of roads, and building eight small houses, at Twickenham, for Mr. Scovell. Mr. Henry McCalla, architect. Quantities not supplied:—

Todd	£2,800 0 0
Wright	1,934 0 0
Eydman	1,925 0 0
Greenwood	1,760 0 0
London Building Company	1,500 0 0
James & Ashton	1,493 0 0
Pugh & Wallis	1,425 0 0

For a villa at Reading, for Mr. G. Palmer. Mr. Joseph Morris, architect. Quantities supplied:—

ACCEPTED TENDERS.

Excavator and Bricklayer.

Strong	£926 16 0

Mason.

Wheeler & Sons	190 0 0

Slater.

Warmsley & Taylor	60 10 0

Plasterer.

Groover	210 0 0

Carpenter and Joiner.

Day	742 2 0

Smith, Zinc-worker, and Bell-hanger.

Huntley & Boorne	149 13 11

Plumber, Glazier, and Painter.

Burton	268 15 0

For the erection of a club-room at the Ghuznee Fort Inn, New Brompton, for Mr. J. B. Jude. Mr. J. H. Andrews, Rochester, architect:—

Gammon	£462 7 11
Mottram	410 0 0
Hopper	388 10 0
Pankhurst	358 0 0
Jennings	346 0 0
Sampson (accepted)	329 0 0

For additions (bedrooms, bath-rooms, &c.) to the Queen's Hotel, Southsea. Mr. Augustus F. Livesay, architect:—

Burbidge	£1,031 16 0
Light (Brothers)	991 0 0
Dillon & Co.	990 0 0

For the first portion of a convent, to be built at Hagley, near Hereford, for Mr. R. Biddulph Phillipps. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. M. S. Sharples:—

Simpson	£7,180 0 0
Perkins	6,890 0 0
Glaister	6,670 0 0
Smith	6,435 0 0
Houghton	6,275 0 0

For alterations at Kingston, for Mr. J. Howell. Mr. W. H. Jarvis, architect. Quantities not supplied:—

Pugh & Wallis	£707 0 0
Crawley	700 0 0
Mursland	685 0 0
Tarrant	666 0 0
Mudie	644 0 0
Johnson & Pugh	567 0 0
Bottom & Co. (accepted)	497 0 0

For church of Sir Humphrey de Trafford, at Stretford, near Manchester. Mr. E. Welby Pugin, architect:—

Eaton	£5,650 0 0
Patterson	5,413 0 0
Southend	5,040 0 0
Glaister	4,770 0 0
Simpson	4,502 0 0
Watts	4,350 0 0
For the Presbytery.:—	
Patterson	1,696 0 0
Southend	1,572 0 0
Eaton	1,563 0 0
Simpson	1,448 0 0
Glaister	1,445 0 0
Watts	1,320 0 0

For new school-room, for the trustees of the Felstead Grammar School, at Felstead, Essex. Mr. Fred. Chancellor, architect. Quantities supplied by Mr. Bartleet:—

Macey	£3,650 0 0
Todd	3,357 0 0
Burrell	3,312 0 0
Cushing	3,300 0 0
Conder	3,265 0 0
Ennor	3,220 0 0
Wood	3,073 0 0
Palmer	2,763 0 0
Rider	2,680 0 0
Brown	2,450 0 0

For Upper Norwood Congregational Chapel.* Mr. John Tarring, architect:—

Saunders	£2,254 0 0
Higgs	1,950 0 0
Richards	1,936 0 0
Jackson & Shaw	1,905 0 0
Seymore	1,897 0 0
Thompson	1,865 0 0
Newman & Mann	1,863 0 0
Dove (Brothers)	1,575 0 0

* Without galleries.

For new stable building, balconies, greenhouse, &c., and new boundary-wall, for Mr. G. Russell, Wandsworth, Surrey. Mr. C. R. Gribles, architect. Quantities not supplied:—

	Stable, Greenhouse, &c.	Boundary Wall.	Total.
Avis	£428	£85	£513
Adamson & Sons	411	79	490
Avies	358	109	467
W. Strong (acpd.)	355	108	463

For the erection of a dwelling house and offices, at Little Arnwood, near Lymington, Hants, for Mr. Henry Marshall. Messrs. Haslam & Buckland, architects. Quantities supplied:—

Till	£1,006 0 0
Sanders	872 0 0
Sharpington & Cole	819 0 0
Philps	799 0 0
Tucker	796 0 0
Butcher (accepted)	716 10 0

For the erection of a pair of cottages and some farm buildings, on the Balmore estate, Caversham, Oxon, for Mr. C. H. Marshall. Messrs. Haslam & Buckland, architects. Quantities supplied:—

Day	£654 0 0
Woodroffe	647 0 0
Barnicoat	620 0 0
Wells	616 0 0
Shepheard	616 0 0
Matthews	597 0 0
Biggs (accepted)	580 0 0

TO CORRESPONDENTS.

"NUMBER ONE THOUSAND."—The publication of this, the thousandth number of *The Builder*, might justify a little gratulatory talk; but we content ourselves with pointing to the fact, as marking an epoch in its course.

G. W. S.—T. B.—Oxoniensis.—** (tracings have arrived).—J. M. (should write [his name so that it can be read).—C. K. (ditto. An illegible signature is either a stupidity, a deceit, or an impertinence; in any case indefensible).—M. & P.—R. B. E.—J. G. M.—A. J. B. (Mr. Lovegrove's).—H. & R.—Col. S.—G. S. X. (the trustees ought to pay; but power to compel is not certain).—S. F. P.—S. P. X.—N. & M.—H. R. L.—Mr. P.—J. M. S.—G. J.—An Architect and Subscriber (we must avoid giving a precise reply, with insufficient information. We should suggest 2 per cent.)—J. M.—E. M.—N.—A. N.—G. M.—Mr. M. W. S.—J. M. B. (declined, as it has appeared elsewhere).—J. G. F. (thanks).—E. A. F.—C. J. H. (another article may be sent).